

**California Regional Water Quality Control Board
Santa Ana Region**

April 20, 2007

ITEM: 17

SUBJECT: Public Workshop: Proposed Basin Plan Amendment to Incorporate Total Maximum Daily Loads (TMDLs) for Organochlorine Compounds for San Diego Creek, Upper Newport Bay and Lower Newport Bay - Supplemental Staff Report

DISCUSSION:

On December 1, 2006, the Regional Board conducted a public workshop to receive evidence and testimony on a proposed Basin Plan amendment to incorporate Total Maximum Daily Loads (TMDLs) for Organochlorine Compounds for San Diego Creek and Upper and Lower Newport Bay. At the Board's February 2, 2007 meeting, Board staff provided a status report on the development of these TMDLs, the preparation of an alternatives matrix (see further discussion below) and consideration of comments received. Based on comments received at, prior to and after the December 1, 2006 workshop, staff has revised the proposed TMDLs, as described herein and shown in Attachment A (Attachment to Tentative Resolution No. R8-2007-0024). The revised proposed Basin Plan amendment includes a modified implementation plan, changes made by Board staff in response to minor errors in the calculation of existing loads that were identified by staff after the December 1, 2006 workshop, and corrections to typographical errors found in certain tables. Changes to the amendment presented in December are shown in a strikeout-underline version in Attachment B.

Attachment C includes comments received on January 3, 2007 from Dr. Daniel Anderson, one of the scientific peer reviewers. Dr. Anderson found no significant flaws in the technical approach used to develop the proposed TMDLs. Comments from two additional peer reviewers are pending. Attachment C also includes a January 11, 2007 letter from the US EPA Region 9, indicating, in part, that "The proposed TMDLs meet all regulatory requirements and will be approvable upon submittal to EPA."

Proposed Revisions to the Recommended TMDLs: Errata

Subsequent to the December 1, 2006 public workshop, Board staff discovered minor errors in the calculations of existing organochlorine compounds loads for San Diego Creek. The initial existing loads calculations for San Diego Creek that were shown in the November 17, 2006 TMDL technical report did not use the updated partition coefficient for total DDT¹ and did not use the correct conversion units (short ton vs. metric ton). Corrected existing loads values are slightly higher for total DDT, and slightly lower for chlordane, PCBs and toxaphene. However, the corrections did not affect the recommended TMDLs for DDT or toxaphene for San Diego Creek since the TMDLs are based on loading capacity, not existing loads. Similarly, the informational TMDLs proposed for chlordane for San Diego Creek were not affected. The recommended informational TMDLs for PCBs, which are based on existing loads, are slightly lower than those proposed in December 2006. For information, Attachment D includes the relevant tables from the November 17, 2006 Technical TMDL report, showing the corrections in the existing load calculations and TMDLs.

To address these corrections, appropriate adjustments to the informational TMDLs and allocations for PCBs have been made in Tables NB-OCs-8, NB-OCs-11 and NB-OCs-12, as shown in Attachment B. A typographical error in Tables NB-OCs-11 and NB-OCs-12 resulting in improper delineation of the Subtotal – LA, MOS and Total TMDL has been corrected. (Tables NB-OCs-9 and NB-OCs-10 are also shown in Attachment B for the sake of clarity; no changes to these tables are proposed.)

Proposed Revisions to the Recommended TMDLs: Revised Implementation Plan

As explained below, the principal recommended revisions to the TMDLs are changes to the proposed Implementation Plan. The recommended changes are shown in Attachment B.

During discussions of the proposed TMDLs at numerous stakeholder meetings, including meetings of the Technical Advisory Committee (TAC) formed by Board staff to review the TMDL documents, certain stakeholders and their consultants raised concerns about Board staff's impairment assessment, proposed numeric targets and the TMDLs, wasteload allocations and load allocations developed to achieve the targets. The stakeholders asserted that the proposed targets, in particular, were scientifically flawed and should be revised consistent with the recommendations of one of the consultants who had served on the TAC. It was also argued that revision of the targets as recommended and application of the

¹ This revised partition coefficient was described in the footnote to Table 4-7 in the November 17, 2006 TMDL technical report but was inadvertently not used in the calculations.

modified targets in a revised impairment assessment would likely obviate the need for the some or all of the proposed TMDLs.

These concerns were likewise raised by certain stakeholders during the December 1, 2006 workshop. During that workshop, Board staff advised the Board that the consultant's recommendations for revised targets had been considered but were rejected on the grounds that the consultant-recommended targets had not been subject to peer review and thus could not be utilized per the direction of the State Board's 303(d) Listing Policy. Board staff indicated that uncertainty regarding the targets and the resultant TMDLs was explicitly recognized in the proposed Basin Plan amendment (see Attachment B, Section 4.b.3, first paragraph) , and that in response to that uncertainty, Board staff had proposed a phased approach to TMDL implementation, including an extended compliance schedule. As described in the proposed Basin Plan amendment, the intent of the phased approach and compliance schedule was to allow for additional monitoring and special investigations that would provide data necessary to refine the targets, TMDLs and allocations. During the December 1, 2006 workshop, Board staff also advised the Board that absent the adoption of USEPA- approvable organochlorine compounds (OCs) TMDLs by the Regional Board, the OCs TMDLs promulgated by the US EPA would remain in effect and would have to be implemented appropriately. Since the USEPA TMDLs do not include an implementation plan or compliance schedule, there would be no basis for specifying a TMDL compliance schedule in permits issued to implement the TMDLs: compliance would be expected immediately. Board staff suggested that since the proposed phased implementation plan already anticipated review of the targets and future revision of the TMDLs if and as necessary, it would be prudent and more productive to address the stakeholders' concerns by receiving and considering their recommendations for improvements to the implementation plan. Board staff noted that the stakeholders had demonstrated their capability for developing and implementing creative and productive approaches to compliance with TMDL and permit requirements through efforts such as the ongoing Nitrogen and Selenium Management Program for the Newport Bay watershed.

To determine whether some type of agreement could be reached between the stakeholders and Board staff concerning the proposed targets, TMDLs, etc., the Board directed that a matrix be prepared to identify and compare the available alternatives. Progress on the matrix by the County of Orange and Board staff was discussed at the February 2, 2007 Board meeting; the matrix was finalized and is attached to this report (Attachment E).

During the February 2, 2007 status report on these TMDLs, Board staff also reviewed the decision criteria that staff had employed in developing the proposed targets (and the TMDLs, based on the selected targets). These include: (1) the targets must be scientifically defensible and based on peer-reviewed science; (2) the targets must be conservative to address uncertainty and to assure that the most sensitive beneficial uses will be protected; and, (3) the targets and TMDLs

must be approvable. Board staff had reviewed these decision criteria with the stakeholders in a meeting in late January, prior to the February 2007 Board meeting. The conclusion drawn based on that discussion was that it would be appropriate to proceed with the numeric targets/TMDLs but to assure that the proposed TMDL Implementation Plan provides for early review and resolution by an Independent Advisory Panel of the issues pertaining to the targets, coupled with the commitment to revise the targets and TMDLs if and as necessary.

During the discussions of these TMDLs, the stakeholders have also repeatedly indicated their concern that pollutants other than the organochlorine compounds may be the cause of toxicity in the watershed, and that focus should be placed on investigation and control of these substances, rather than on the organochlorine compounds. In addition, the stakeholders have recommended that a comprehensive, integrated approach be taken to address the requirements of present and future TMDLs for the watershed. For example, the USEPA has promulgated TMDLs for the Newport Bay watershed for metals and selenium; Regional Board action on these TMDLs is pending. A sediment TMDL for the Bay and its watershed is already in effect and will likely be brought before the Regional Board in the relatively near future for review and revision. Given the interrelationship between pollutant transport (including the OCs) and erosion and sedimentation, integration of monitoring and control requirements for these TMDLs would likely provide an effective and more efficient approach.

Consistent with these recommendations and with the example provided by the Nitrogen and Selenium Management Program, the County of Orange, acting on behalf of many of the stakeholders, prepared preliminary recommendations for changes to the proposed Implementation Plan. The recommendations were reviewed briefly during the February 2, 2007 status report to the Board. To summarize, three phases, the first two of which would proceed concurrently, were proposed: Phase I would entail resolution of technical uncertainties pertaining to TMDL targets, utilizing an Independent Advisory Panel, and modification of the TMDL targets as appropriate; Phase II would require that a Working Group² of interested parties be convened to develop and implement a Work Plan to address TMDL requirements and toxicity in the Newport Bay watershed; in the third phase, the TMDLs and implementation plan would be evaluated and revised as appropriate.

As discussed at the February 2, 2007 Board meeting, Board staff agreed conceptually with the approach recommended by the County and the stakeholders the County represents, recognizing the significant benefits that would be afforded by review of the technical aspects of the TMDLs by an Independent Advisory Panel, and by a comprehensive, integrated approach to water quality investigation and TMDL implementation in the Newport Bay

² A Working Group has been formed to implement the Nitrogen and Selenium Management Program for the watershed. The Working Group formed to address OCs TMDLs and toxicity issues in the watershed will likely include many of the same agencies and parties.

watershed. Indeed, the implementation plan initially proposed by Board staff included an opportunity for the stakeholders to implement an integrated Work Plan approach (Task 7 of the proposed Implementation Plan (see Section 4.b.3 of Attachment B). Board staff advised the Board in February that there appeared to be agreement to move forward with the proposed targets and TMDLs, provided that the implementation plan was revised to reflect the County-recommended approach.

It should be emphasized that the stakeholders involved in these discussions also included other parties, including Dr. John Skinner and Dr. Joseph Skorupa of the U.S. Fish and Wildlife Service. Dr. Skinner expressed concern that the Implementation Plan should continue to require action to evaluate dredging options and financing mechanisms, as proposed in Board staff's initial Implementation Plan ("Task 6: Evaluate Feasibility and Mechanisms to Fund Future Dredging Operations" of Section 4.b.3 of the proposed amendment (Attachment B)). This concern is based on significant questions of the reliability of Federal, State and/or local funding to support dredging activities in Newport Bay. These dredging activities are critically needed to assure beneficial use protection in the Bay.

While Board staff agreed conceptually with the implementation plan changes identified by the County, we indicated to the County/stakeholder representatives and other parties during our late January meeting that: (1) the tasks to be addressed in the Work Plan must be more explicitly defined; (2) the tasks must include specific action(s) directed to address organochlorine compounds in the near term; and, (3) alternative implementation strategies must be identified for dischargers who elect not to participate in the Working Group/Work Plan approach.

The following describes the revised Implementation Plan proposed by Board staff, taking into account the considerations and recommendations discussed above. The modified Plan is shown in the revised proposed Basin Plan amendment (Attachment A); revisions to the Implementation Plan are delineated in a strike-out/underline version of the amendment as proposed initially (Attachment B).

The proposed revised Implementation Plan continues to employ a phased, adaptive management approach, with the results of monitoring and special studies guiding TMDL implementation and revision, where appropriate, over time. However, the revised Plan differs from that initially proposed by Board staff in several key respects:

- (1) Language has been added to the appropriate Tasks to make clear that responsible parties in the watershed who participate in the Working Group to develop and implement a comprehensive Work Plan would not be required to implement these Tasks individually. Rather, the

- Task requirements would be satisfied by timely and effective implementation of the Regional Board approved Work Plan.
- (2) Language has been added to Task 7 to include a provision for an Independent Advisory Panel to address and resolve technical and scientific questions regarding the technical TMDL, potentially resulting in amendment of the TMDL.
 - (3) The proposed TMDLs specify the compliance schedule as "as soon as possible but no later than December 31, 2015". The text in Task 1 (WDRs and NPDES Permits) has been modified to specify that for Working Group members, compliance with wasteload allocations would not be required prior to completion of execution of the Work Plan, which would be required to be accomplished within 5 years of State approval of these TMDLs. Similarly, Working Group members would not be required to comply with load allocations prior to completion of the Work Plan.
 - (4) Responsible parties who do not participate in the Working Group/Work Plan would be required to implement the applicable Tasks; compliance by these parties to applicable wasteload/load allocations would be required "as soon as possible", as determined by the Regional Board's Executive Officer.
 - (5) Additional detail is provided in Tasks 3, 4, 5 and 7 concerning the individual elements to be addressed.

In summary, the revised proposed Basin Plan amendment is shown in Attachment A. It differs from the proposed Basin Plan amendment discussed at the December 1, 2006 workshop in that it includes the revised Implementation Plan described in the preceding discussion and minor corrections. To facilitate comparison of the two versions, a copy of relevant parts of the amendment proposed at the December 1, 2006 is included as Attachment B; additions are underlined while deletions are shown in strike-out type.

Further revisions to the proposed Basin Plan amendment will be considered based on additional comments received. Written responses to all written comments submitted at least two weeks prior to the public hearing on the proposed Basin Plan amendment will be prepared. The public hearing is currently scheduled for the June 1, 2007 Board meeting.

Attachments

Attachment A – Revised Proposed San Diego Creek and Upper and Lower Newport Bay Organochlorine Compounds TMDLs Basin Plan amendment
Attachment B – Proposed Changes to December 1, 2006 BPA Redline Version
Attachment C – Scientific Peer Reviewer and USEPA Comment Letters
Attachment D - Revised November 17, 2006 Staff Report Tables
Attachment E – Final Targets Matrix

ATTACHMENT TO RESOLUTION NO. R8-2007- 0024

(NOTE: The language identified below is proposed to be inserted into Chapter 5 of the Basin Plan. If the amendment is approved, corresponding changes will be made to the Table of Contents, the List of Tables, page numbers, and page headers in the plan. Due to the two-column page layout of the Basin Plan, the location of tables in relation to text may change during final formatting of the amendment. In order to accommodate other new TMDLs adopted as Basin Plan amendments and to maintain their order by watershed, the table and figure identifiers may be modified in future formatting of the Basin Plan for re-publication purposes. However, no substantive changes to the tables/figures would occur absent a Basin Plan Amendment.)

Chapter 5 - Implementation Plan, Discussion of Newport Bay Watershed (page 5-39 et seq), add the following to 4. Toxics Substances Contamination

4.b Organochlorine Compounds TMDLs

Organochlorine compounds, including DDT, PCBs, toxaphene and chlordane, possess unique physical and chemical properties that influence their persistence, fate and transport in the environment. While these characteristics vary among the organochlorine compounds, they all exhibit an ability to resist degradation, partition into sediment, and to accumulate in the tissue of organisms, including invertebrates, fish, birds and mammals. The bioaccumulation of these compounds can adversely affect the health and reproductive success of aquatic organisms and their predators, and can pose a health threat to human consumers.

A TMDL technical report prepared by Regional Board staff [Ref. # 1] describes organochlorine-related problems in Newport Bay and its watershed and delineates the technical basis for the TMDLs that follow.

The waterbody-pollutant combinations for which organochlorine compounds TMDLs were established by the Regional Board are listed in Table NB-OCs-1. These TMDLs differ from those established by USEPA in 2002 in several respects:

First, based on an updated impairment assessment that utilized new data and applied the State Water Board's "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List" (2004) [Ref. # 2], the Regional Board established TMDLs for a list of organochlorine compound-waterbody combinations different from that of USEPA. As shown in Table NB-OCs-2, USEPA also established TMDLs for dieldrin, chlordane, and PCBs in San Diego Creek and for dieldrin in Lower Newport Bay. In contrast, the Regional Board found no impairment as the result of dieldrin in any of these waters, nor was impairment due to chlordane or PCBs found in San Diego Creek and its tributaries.

As described in the TMDL technical report, Regional Board staff also found no impairment due to DDT in San Diego Creek or its tributaries. However, in adopting the 2006 Section 303(d) list (October 25, 2006, Resolution No. 2006-0079), the State Water Board found impairment due to DDT in Peter's Canyon Channel. In response, the Regional Board established a TMDL for DDT in San Diego Creek and its tributaries, including Peters Canyon Channel.

Second, corrections and modifications were made to loading capacities and existing loads identified in USEPA's TMDLs. Finally, an implementation plan is specified (see Section 4.b.3).

While the Regional Board did not establish TMDLs for chlordane and PCBs for San Diego Creek and tributaries, the Board did develop informational TMDLs for these substances in these waters, pursuant to Clean Water Act Section 303(d)(3). These informational TMDLs are shown in Table NB-OCs-3. This action was taken in light of several factors. First, the largest source of organochlorine compounds to Newport Bay is San Diego Creek. Second, the data suggest that the existing loading of chlordane to the Creek is greater than the loading capacity. This suggests that the lack of finding of impairment due to chlordane may be simply a reflection of a lack of data with which to assess impairment. Finally, these informational TMDLs may forward action to address organochlorine compound problems in the watershed. These informational TMDLs have no regulatory effect but may be used as the basis for further investigation of the relative contributions of the various sources of organochlorine compound inputs to San Diego Creek and thence the Bay. In the long-term, this would be expected to help assure proper apportionment of responsibility for implementation of the TMDLs identified in Table NB-OCs-1.

Table NB-OCs-1. Waterbody-pollutant combinations for which Organochlorine Compound TMDLs are established

<i>Waterbody</i>	<i>Pollutant</i>
San Diego Creek and tributaries	DDT, Toxaphene
Upper Newport Bay	Chlordane, DDT, PCBs
Lower Newport Bay	Chlordane, DDT, PCBs

Table NB-OCs-2. Waterbody-pollutant combinations for which Organochlorine Compounds TMDLs were established by USEPA (2002) and Regional Board (2007)

<i>Waterbody</i>	<i>TMDLs</i>	
	USEPA	Regional Board
San Diego Creek and tributaries*	Chlordane, dieldrin, DDT, PCBs, Toxaphene	DDT, Toxaphene
Upper Newport Bay	Chlordane, DDT, PCBs	Chlordane, DDT, PCBs
Lower Newport Bay	Chlordane, dieldrin, DDT, PCBs	Chlordane, DDT, PCBs

*TMDLs are established for San Diego Creek and tributaries, even if impairment was only found in particular reaches (e.g., SWRCB found DDT impairment in Peter's Canyon Channel, a primary tributary to San Diego Creek Reach 1, but the TMDL includes all of San Diego Creek and tributaries).

Table NB-OCs-3. Informational TMDLs

<i>Waterbody</i>	<i>Informational TMDLs</i>
San Diego Creek and tributaries	Chlordane, PCBs

4.b.1 Numeric Targets used in Organochlorine Compounds TMDLs

Numeric targets identify specific endpoints in sediment, water column or tissue that equate to attainment of water quality standards, which is the purpose of TMDLs. Multiple targets may be appropriate where a single indicator is insufficient to protect all beneficial uses and/or attain all applicable water quality objectives. The range of beneficial uses identified in this Basin Plan (see Chapter 3) for the waters addressed by the organochlorine compounds TMDLs makes clear that the targets must address the protection of aquatic organisms, wildlife (including federally listed threatened and endangered species) and human consumers of recreationally and commercially caught fish.

Sediment, water column and fish tissue targets are identified for these TMDLs, as shown in Table NB-OCs-4. The sediment and water column targets are identical to those selected by USEPA in the development of their organochlorine compounds TMDLs (2002). Fish tissue targets are added for the protection of aquatic life and wildlife.

The targets employed in the development of informational TMDLs for chlordane and PCBs in San Diego Creek and its tributaries are shown in Table NB-OCs-5.

Table NB-OCs-4. Numeric Sediment, Fish Tissue, and Water Column TMDL Targets

	Total DDT	Chlordane	Total PCBs	Toxaphene
Sediment Targets¹; units are µg/kg dry weight				
San Diego Creek and tributaries	6.98			0.1
Upper & Lower Newport Bay	3.89	2.26	21.5	
Fish Tissue Targets for Protection of Human Health²; units are µg/kg wet weight				
San Diego Creek and tributaries	100			30
Upper & Lower Newport Bay	100	30	20	
Fish Tissue Targets for Protection of Aquatic Life and Wildlife³; units are µg/kg wet weight				
San Diego Creek and tributaries	1000			100
Upper & Lower Newport Bay	50	50	500	
Water Column Targets for Protection of Aquatic Life, Wildlife & Human Health⁴ (µg/L)				
San Diego Creek and tributaries				
<i>Acute Criterion (CMC)</i>	1.1			0.73
<i>Chronic Criterion (CCC)</i>	0.001			0.0002
<i>Human Health Criterion</i>	0.00059			0.00075
Upper & Lower Newport Bay				
<i>Acute Criterion (CMC)</i>	0.13	0.09		
<i>Chronic Criterion (CCC)</i>	0.001	0.004	0.03	
<i>Human Health Criterion</i>	0.00059	0.00059	0.00017	

¹Freshwater and marine sediment targets, except toxaphene, are TELs from Buchman, M.F. 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle WA, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration, 12 pp. Toxaphene target is from N.Y. Dept. of Environmental Conservation.

²Freshwater and marine fish tissue targets for protection of human health are OEHHA SVs.

³Freshwater and marine fish tissue targets for protection of aquatic life and wildlife are from Water Quality Criteria 1972. A report of the Committee on Water Quality Criteria, Environmental Studies Board, National Academy of Sciences, National Academy of Engineering. Washington, D.C., 1972.

⁴Freshwater and marine targets are from California Toxics Rule (2000).

Table NB-OCs-5. Numeric Sediment, Fish Tissue, and Water Column Targets used in Informational TMDLs

	Chlordane	Total PCBs
Sediment Targets¹; units are µg/kg dry weight		
San Diego Creek and tributaries	4.5	34.1
Fish Tissue Targets for Protection of Human Health²; units are µg/kg wet weight		
San Diego Creek and tributaries	30	20
Fish Tissue Targets for Protection of Aquatic Life and Wildlife³; units are µg/kg wet weight		
San Diego Creek and tributaries	100	500
Water Column Targets for Protection of Aquatic Life, Wildlife & Human Health⁴ (µg/L)		
San Diego Creek and tributaries		
<i>Acute Criterion (CMC)</i>	2.4	
<i>Chronic Criterion (CCC)</i>	0.0043	0.014
<i>Human Health Criterion</i>	0.00059	0.00017

¹Freshwater sediment targets are TELs from Buchman, M.F. 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle WA, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration, 12 pp.

²Freshwater fish tissue targets for protection of human health are OEHHA SVs.

³Freshwater fish tissue targets for protection of aquatic life and wildlife are from Water Quality Criteria 1972. A report of the Committee on Water Quality Criteria, Environmental Studies Board, National Academy of Sciences, National Academy of Engineering. Washington, D.C., 1972.

⁴Freshwater targets are from California Toxics Rule (2000).

The linkage between adverse effects in sensitive wildlife species and concentrations of the organochlorine pollutants in sediments, prey organisms and water is not well understood at the present time, although work is underway to better understand ecological risk in Newport Bay. In addition, the State is in the process of developing sediment quality objectives that should provide guidance for assessing adverse effects due to pollutant bioaccumulation. Reducing contaminant loads in the sediment will result in progress toward reducing risk to aquatic life and wildlife. During implementation of these TMDLs, additional and/or modified wildlife or other targets will be identified as risk assessment information becomes available. These TMDLs will be revisited (see 4.b.3) and revised as appropriate.

4.b.2. Organochlorine Compounds TMDLs, Wasteload Allocations, Load Allocations and Compliance Dates

The organochlorine compounds TMDLs for San Diego Creek and its tributaries, Upper Newport Bay and Lower Newport Bay are shown in Tables NB-OCs-6 and NB-OCs-7. The TMDLs are expressed on a daily basis (average grams per day) in Table NB-OCs-6, and on an annual basis (grams per year) in Table NB-OCs-7. Expression of the TMDLs on a daily basis is intended to comply with a relevant court decision. However, because of the strong seasonality associated with the loading of organochlorine compounds during storm events, it is appropriate for implementation to occur based on average annual loadings. The TMDLs are to be achieved as soon as possible but no later than December 31, 2015.

Table NB-OCs-6. TMDLs for San Diego Creek, Upper and Lower Newport Bay (expressed on a "daily" basis to be consistent with the D.C. Circuit Court of Appeals decision in *Friends of the Earth, Inc. v. EPA, et al.*, No. 05-5015 [D.C. Cir.2006]).

Water Body	Pollutant	TMDL (average grams per day)^a
San Diego Creek and Tributaries	Total DDT	1.08
	Toxaphene	0.02
Upper Newport Bay	Total DDT	0.44
	Chlordane	0.25
	Total PCBs	0.25
Lower Newport Bay	Total DDT	0.16
	Chlordane	0.09
	Total PCBs	0.66

^a Compliance to be achieved as soon as possible but no later than December 31, 2015.

Attachment A

Attachment to Resolution No. R8-2007-0024

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**Table NB-OCs-7. TMDLs for San Diego Creek, Upper and Lower Newport Bay
(expressed on annual basis for implementation purposes)**

Water Body	Pollutant	TMDL (grams per year)^a
San Diego Creek and Tributaries	Total DDT	396
	Toxaphene	6
Upper Newport Bay	Total DDT	160
	Chlordane	93
	Total PCBs	92
Lower Newport Bay	Total DDT	59
	Chlordane	34
	Total PCBs	241

^a Compliance to be achieved as soon as possible but no later than December 31, 2015.

Informational TMDLs for San Diego Creek and its tributaries for chlordane and total PCBs are shown in Table NB-OCs-8. Again these informational TMDLs are expressed on an average daily and annual basis.

**Table NB-OCs-8. Informational TMDLs for San Diego Creek and Tributaries
(expressed on average daily and annual bases)**

Water Body	Pollutant	TMDL (average grams per day)
San Diego Creek and Tributaries	Chlordane	0.70
	Total PCBs	0.34
		TMDL (grams per year)
San Diego Creek and Tributaries	Chlordane	255
	Total PCBs	125

Wasteload and load allocations to achieve the TMDLs specified in Tables NB-OCs-6 and NB-OCs-7 are shown in Tables NB-OCs-9 and NB-OCs-10, respectively. Like the TMDLs, the allocations are expressed in terms of both average daily and annual loads. An explicit margin of safety (MOS) of ten percent was applied in calculating the allocations. Consistent with the TMDL compliance schedule, these allocations are to be achieved as soon as possible but no later than December 31, 2015.

Wasteload and load allocations necessary to meet the informational TMDLs shown in Table NB-OCs-8 are identified in Tables NB-OCs-11 (expressed as average daily loads) and NB-OCs-12 (expressed as annual loads). These allocations are identified only for informational purposes.

4.b.3. Implementation of Organochlorine Compounds TMDLs

These TMDLs are to be implemented within an adaptive management framework, with compliance monitoring, special studies, and stakeholder interaction guiding the process over time. Information obtained from compliance monitoring will measure progress toward achievement of WLAs and LAs, potentially leading to changes to TMDL allocations; ongoing investigations and recommended special studies, if implemented, may provide information that leads to revisions of the TMDLs, adjustments to the implementation schedule, and/or improved implementation strategies. Thus, implementation of the TMDLs is expected to be an ongoing and dynamic process.

The implementation plan identified in this section reflects the adaptive management, phased approach to the organochlorine compound TMDLs adopted by the Regional Board. The Board found a phased approach, with compliance schedules, appropriate in light of the following considerations. First, it was recognized that additional monitoring and special studies were either already underway or would be needed to address data limitations and significant uncertainty associated with the TMDL calculations, and that changes to the TMDLs might be appropriate based on the results of those investigations. Second, it was also understood that these data limitations and uncertainties pertained to the impairment assessment itself and the determination of the specific organochlorine compounds for which TMDLs are required. Third, the natural attenuation of these compounds over time is expected to affect significantly the selection, development and implementation of TMDLs. As described in the TMDL technical report [Ref. 1], use of the organochlorine compounds addressed by these TMDLs has been banned for many years and trend analyses indicate declining concentrations of these substances in fish tissue over time. Natural attenuation should eventually reduce organochlorine pollutant levels to concentrations that pose no threat to beneficial uses in San Diego Creek or Newport Bay. While natural degradation of these compounds is likely the principal cause of the observed decline in fish tissue concentrations, the implementation of erosion and sediment controls and other Best Management Practices to address compliance with the sediment and nutrient TMDLs for Newport Bay and its watershed (see

Table NB-OCs-9. TMDLs and Allocations for San Diego Creek, Upper and Lower Newport Bay (expressed on a "daily" basis to be consistent with the recent D.C. Circuit Court of Appeals decision in Friends of the Earth, Inc. v. EPA, et al., No. 05-5015 [D.C. Cir.2006]).^{a,b}

		Total DDT	Chlordane	Total PCBs	Toxaphene
Type		(average grams/day)			
San Diego Creek					
WLA	Urban Runoff – County MS4 (36%)	0.35			0.005
	Construction (28%)	0.27			0.004
	Commercial Nurseries (4%)	0.04			0.001
	Caltrans MS4 (11%)	0.11			0.002
	Subtotal – WLA (79%)	0.77			0.01
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.05			0.001
	Open Space (9%)	0.09			0.001
	Streams & Channels (2%)	0.02			0.0003
	Undefined (5%)	0.05			0.001
	Subtotal – LA (21%)	0.21			0.003
MOS (10% of total TMDL)		0.11			0.002
Total TMDL		1.08			0.02
Upper Newport Bay					
WLA	Urban Runoff - County MS4 (36%)	0.14	0.08	0.08	
	Construction (28%)	0.11	0.06	0.06	
	Commercial Nurseries (4%)	0.02	0.01	0.01	
	Caltrans MS4 (11%)	0.04	0.03	0.02	
	Subtotal – WLA (79%)	0.31	0.18	0.18	
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.02	0.01	0.01	
	Open Space (9%)	0.04	0.02	0.02	
	Streams & Channels (2%)	0.01	0.005	0.005	
	Undefined (5%)	0.02	0.01	0.01	
	Subtotal – LA (21%)	0.08	0.05	0.05	
MOS (10% of Total TMDL)		0.04	0.03	0.03	
Total TMDL		0.44	0.25	0.25	
Lower Newport Bay					
WLA	Urban Runoff – County MS4 (36%)	0.05	0.03	0.21	
	Construction (28%)	0.04	0.02	0.17	
	Commercial Nurseries (4%)	0.01	0.003	0.02	
	Caltrans MS4 (11%)	0.02	0.01	0.07	
	Subtotal – WLA (79%)	0.11	0.07	0.47	
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.01	0.004	0.03	
	Open Space (9%)	0.01	0.01	0.05	
	Streams & Channels (2%)	0.003	0.002	0.01	
	Undefined (5%)	0.01	0.004	0.03	
	Subtotal – LA (21%)	0.03	0.02	0.12	
MOS (10% of Total TMDL)		0.02	0.01	0.07	
Total TMDL		0.16	0.09	0.66	

^a Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the Total TMDL. Percent WLA and Percent LA add to 100%.

^b Compliance to be achieved as soon as possible but no later than December 31, 2015.

Table NB-OCs-10. TMDLs and Allocations (Annual) for San Diego Creek, Upper and Lower Newport Bay (expressed on an "annual" basis for implementation purposes).^{a,b}

		Total DDT	Chlordane	Total PCBs	Toxaphene
Type		(grams per year)			
San Diego Creek					
WLA	Urban Runoff – County MS4 (36%)	128.3			1.9
	Construction (28%)	99.8			1.5
	Commercial Nurseries (4%)	14.3			0.2
	Caltrans MS4 (11%)	39.2			0.6
	Subtotal – WLA (79%)	281.6			4.3
LA	Agriculture (5%) (excludes nurseries under WDRs)	17.8			0.3
	Open Space (9%)	32.1			0.5
	Streams & Channels (2%)	7.1			0.1
	Undefined (5%)	17.8			0.3
	Subtotal – LA (21%)	74.8			1.1
MOS (10% of Total TMDL)		40			0.6
Total TMDL		396			6
Upper Newport Bay					
WLA	Urban Runoff – County MS4 (36%)	51.8	30.1	29.8	
	Construction (28%)	40.3	23.4	23.2	
	Commercial Nurseries (4%)	5.8	3.3	3.3	
	Caltrans MS4 (11%)	15.8	9.2	9.1	
	Subtotal – WLA (79%)	113.8	66.1	65.4	
LA	Agriculture (5%) (excludes nurseries under WDRs)	7.2	8	7	
	Open Space (9%)	13.0	7.6	7.5	
	Streams & Channels (2%)	2.9	1.7	1.7	
	Undefined (5%)	7.2	4.2	4.2	
	Subtotal – LA (21%)	30.2	21.4	20.3	
MOS (10% of Total TMDL)		16	9	9	
Total TMDL		160	93	92	
Lower Newport Bay					
WLA	Urban Runoff – County MS4 (36%)	19.1	11.0	78.1	
	Construction (28%)	14.9	8.6	60.7	
	Commercial Nurseries (4%)	2.1	1.2	8.7	
	Caltrans MS4 (11%)	5.8	3.4	23.9	
	Subtotal – WLA (79%)	41.9	24.2	171.4	
LA	Agriculture (5%) (excludes nurseries under WDRs)	2.7	1.5	10.8	
	Open Space (9%)	4.8	2.8	19.5	
	Streams & Channels (2%)	1.1	0.6	4.3	
	Undefined (5%)	2.7	1.5	10.8	
	Subtotal – LA (21%)	11.2	6.4	45.5	
MOS (10% of Total TMDL)		5.9	3.4	24	
Total TMDL		59	34	241	

^a Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the total TMDL. Percent WLA and Percent LA add to 100%.

^b Compliance to be achieved as soon as possible but no later than December 31, 2015.

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Table NB-OCs-11. Informational TMDLs and Allocations for San Diego Creek (expressed on a "daily" basis).^a

Category	Type	Chlordane	Total PCBs
		(average grams per day)	
San Diego Creek			
WLA	Urban Runoff – County MS4 (36%)	0.23	0.11
	Construction (28%)	0.18	0.09
	Commercial Nurseries (4%)	0.03	0.01
	Caltrans MS4 (11%)	0.07	0.03
	Subtotal – WLA (79%)	0.50	0.24
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.03	0.02
	Open Space (9%)	0.06	0.03
	Streams & Channels (2%)	0.01	0.01
	Undefined (5%)	0.03	0.02
	Subtotal – LA (21%)	0.13	0.08
MOS (10% of total TMDL)		0.07	0.03
Total TMDL		0.70	0.34

^a Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the Total TMDL. Percent WLA and Percent LA add to 100%.

Table NB-OCs-12. Informational TMDLs and Allocations (Annual) for San Diego Creek (expressed on an "annual" basis)^a.

Category	Type	Chlordane	Total PCBs
		(grams per year)	
San Diego Creek			
WLA	Urban Runoff – County MS4 (36%)	82.6	40.5
	Construction (28%)	64.3	31.5
	Commercial Nurseries (4%)	9.2	4.5
	Caltrans MS4 (11%)	25.2	12.4
	Subtotal – WLA (79%)	181.3	88.9
LA	Agriculture (5%) (excludes nurseries under WDRs)	11.5	5.6
	Open Space (9%)	20.7	10.1
	Streams &Channels (2%)	4.6	2.3
	Undefined (5%)	11.5	5.6
	Subtotal – LA (21%)	48.2	23.6
MOS (10% of total TMDL)		26	13
Total TMDL		255	125

^a. Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the total TMDL. Percent WLA and Percent LA add to 100%.

discussions of these TMDLs elsewhere in this Basin Plan) is a probable factor. In any case, the observed trends suggest that as monitoring continues in the watershed and pollutant levels decline, some or all of the organochlorine compounds may warrant delisting from the Clean Water Act Section 303(d) list of impaired waters. Again, these TMDLs would need to be revisited accordingly.

This implementation plan also reflects recommendations by regulated stakeholders in the Newport Bay watershed to convene a Working Group to develop and implement a comprehensive Work Plan to: address, as an early action item, the technical uncertainties in these TMDLs and make recommendations for revisions, as appropriate; identify and prioritize tasks necessary to implement the TMDLs; integrate TMDL implementation tasks with those already being conducted in response to other programs (e.g., permits, other TMDLs); and, investigate other pollutants of concern in the watershed.

Table NB-OCs-13 lists the tasks and schedules needed to implement the organochlorine TMDLs. This Implementation Plan is aimed at identifying actions to accelerate the decline in organochlorine compound concentrations in the watershed, and to augment their natural attenuation. The implementation plan is focused to a large extent on the monitoring and, where necessary, enhanced implementation of Best Management Practices (BMPs) to reduce the erosion and transport to surface waters of fine sediment to which the organochlorine compounds tend to adhere. Many of these BMPs are already in place as the result of existing permits issued by the Regional Board or State Water Resources Control Board for stormwater and construction activities, and/or in response to established TMDLs. The intent is to assure that source control activities are implemented to reduce any active sources of

the organochlorine compounds, and in other areas where such actions will be most effective in meeting the TMDL goals. Monitoring and special study requirements are included to provide for TMDL compliance assessment and refinement.

In response to the recommendation by watershed stakeholders, this implementation plan provides an opportunity for dischargers to participate in the development and implementation of a comprehensive Work Plan. It is expected that the implementation tasks identified in Table NB-OCs-13 will be considered in the development of the Work Plan and incorporated, as appropriate. Implementation of the Work Plan, which will be approved by the Regional Board at a public hearing, will obviate the need for individual actions on the tasks in Table NB-OCs-13 by members of the Working Group. Completion of the Work Plan will result, in part, in recommendations for revisions to these TMDLs based on review by an Independent Advisory Panel and the results of ongoing or requisite monitoring and investigations, and in the development of a comprehensive plan for BMPs and other actions needed to assure compliance with the TMDLs, wasteload allocations and load allocations as soon as possible after completion of execution of the Work Plan but no later than December 31, 2015¹. Dischargers who elect not to participate in the Work Plan approach will be required to implement the tasks shown in Table NB-OCs-13, as appropriate.

Each of the tasks identified in Table NB-OCs-13 is described below.

¹ This compliance schedule and/or the organochlorine compounds TMDLs may be modified, through the Basin Planning process, in response to information provided by implementation of the Work Plan tasks and/or other investigations.

Table NB-OCs-13. Organochlorine Compounds TMDLs Implementation Tasks and Schedule

Task	Description	Compliance Date – As Soon As Possible But No Later Than
PHASE I IMPLEMENTATION		
1	Revise existing WDRs and NPDES permits: <i>Commercial Nursery WDRs, MS4 Permit, Other NPDES Permits</i>	Upon OAL approval of BPA and permit renewal
2 ^a	a. Develop proposed agricultural BMP and monitoring program to assess and control OCs discharges. b. Implement program	a. (3 months after OAL approval of BPA) b. Upon Regional Board approval
3 ^a	a. Identify responsible parties for open space areas b. Develop proposed monitoring program to assess OCs inputs from open space areas c. Implement proposed monitoring program d. Develop plan to implement effective erosion and sediment control BMPs for management of fine particulates (if found necessary based on monitoring results) e. Implement BMP plan	a. (1 month after OAL approval of BPA) b. 2 months after notification of responsible parties c. Upon Regional Board approval d. Within 6 months of notification of need to develop plan e. Upon Regional Board approval
4 ^a	Implement effective sediment and erosion control BMPs for management of fine particulates on construction sites: Regional Board: a. Develop SWPPP Improvement Program b. Conduct outreach/training programs MS4 permittees: c. Revise planning processes as necessary to assure proper communication of SWPPP requirements d. Evaluate/implement BMPs effective in reducing/eliminating organochlorine discharges: i. Submit proposed plan and schedule for BMP studies and implement plan ii. Submit studies report; including plan and schedule to implement BMPs/include in Guidance Manual iii. Implement BMPs/include in Guidance Manual	a. (Upon OAL approval of BPA) b. (Two months of OAL approval of BPA) c : Within 3 months of appropriate revision of the MS4 permit d: i. Submit plan within 3 months of 13267 letter issuance/MS4 permit revision and implement upon Executive Officer approval; ii. Within 6 months of completion of studies plan; iii. Upon Executive Officer approval
5 ^a	Evaluate sources of OCs; develop and implement BMPs accordingly:	a. Submit plan within 3 months of 13267 letter issuance/appropriate

	<ul style="list-style-type: none"> a. Submit proposed plan and schedule for source area investigations b. Implement investigation plan c. Submit report of investigation findings and plan/schedule for implementation of BMPs d. Implement BMP plan 	<ul style="list-style-type: none"> revision of the MS4 permit b. Upon Executive Officer approval c. Within 6 months of completion of investigation plan d. Upon Executive Officer approval
6 ^a	Evaluate feasibility and mechanisms to fund future dredging operations within San Diego Creek, Upper and Lower Newport Bay	Submit feasibility/funding report within <i>(3 years after OAL approval of BPA)</i>
7	Develop comprehensive Work Plan to meet TMDL implementation requirements, consistent with an adaptive management approach <ul style="list-style-type: none"> a. Convene Working Group b. Submit proposed Work Plan c. Implement Work Plan d. Complete execution of Work Plan 	<ul style="list-style-type: none"> a. <i>(one month of OAL approval of BPA)</i> b. <i>(3 months after OAL approval of BPA)</i> c. Upon Regional Board approval d. Within 5 years of Work Plan approval
8 ^a	Revise regional monitoring program	<i>(3 months after OAL approval of BPA); Annual Reports due November 15</i>
9	Conduct special studies	As funding allows, and in order of priority identified in comprehensive Work Plan (Task 7), if applicable
PHASE II IMPLEMENTATION		
10	Review TMDLs, including numeric targets, WLAs and LAs; delist or revise TMDLs pursuant to established Sediment Quality Objectives, new data, and results of special studies	No later than <i>(5 years from OAL approval of BPA)</i>

a. The tasks and schedules identified in the Regional Board approved Work Plan developed by the Working Group shall govern implementation activities by members of the Working Group.

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Table NB-OCs-14. Existing NPDES Permits and WDRs Regulating Discharges in the Newport Bay Watershed

No.	Permit Title	Order No.	NPDES No.
1	Waste Discharge Requirements for the United States Department of the Navy, Former Marine Corps Air Station Tustin, Discharge to Peters Canyon Wash in the San Diego Creek/Newport Bay Watershed	R8-2006-0017	CA8000404
2	Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the Incorporated Cities of Orange County within the Santa Ana Region - Areawide Urban Storm Water Runoff - Orange County (MS4 permit)	R8-2002-0010	CAS618030
3	General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (de minimus) Threat to Water Quality	R8-2003-0061 as amended by R8-2005-0041 and R8-2006-0004	CAG998001
4	General Waste Discharge Requirements for Short-term Groundwater-Related Dischargers and De Minimus Wastewater Discharges to Surface Waters Within the San Diego Creek/Newport Bay Watershed	R8-2004-0021	CAG998002
5	General Groundwater Cleanup Permit for Discharges to Surface Waters of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Petroleum Hydrocarbons, Solvents and/or Petroleum Hydrocarbons mixed with Lead and/or Solvents	R8-2002-0007, as amended by R8-2003-0085 and R8-2005-0110	CAG918001
6	Waste Discharge Requirements for City of Tustin's 17th Street Desalter	R8-2002-0005	CA8000305
7	Waste Discharge Requirements for City of Irvine, Groundwater Dewatering Facilities, Irvine, Orange County,	R8-2005-0079	CA8000406
8	Waste Discharge Requirements for Bordiers Nursery, Inc.	R8-2003-0028	
9	Waste Discharge Requirements Hines Nurseries, Inc.	R8-2004-0060	
10	Waste Discharge Requirements for El Modeno Gardens, Inc., Orange County	R8-2005-0009	
11	Waste Discharge Requirements for Nakase Bros. Wholesale Nursery, Orange County	R8-2005-0006	

Phase I Implementation**Task 1: WDRs and NPDES Permits**

The Regional Board shall review and revise, as necessary, existing NPDES permits and/or WDRs to incorporate the appropriate TMDL WLAs, compliance schedules, and monitoring program requirements. These permits are identified in Table NB-OCs-14. The appropriate TMDL WLAs, compliance schedules and monitoring program requirements shall be included in new NPDES permits/WDRs. The NPDES permits/WDRs shall specify TMDL-related provisions that apply provided that: (1) the dischargers are and remain members of the Working Group (see Task 7); and (2) the approved Work Plan developed by the Working Group is implemented in a timely and effective manner. The NPDES permit/WDRs shall also include TMDL-related provisions that apply if the discharger(s) do not participate or discontinue participation in the Working Group and/or if the approved Work Plan is not implemented effectively or in a timely manner.

Compliance with the TMDLs and wasteload allocations is to be achieved as soon as possible, but no later than December 31, 2015. For Working Group participants, NPDES permits/WDRs will specify that compliance with the wasteload allocations will not be required prior to the five year completion of execution of the Work Plan. NPDES permits/WDRs issued to Working Group members subsequent to the completion of execution of the Work Plan will require compliance with wasteload allocations as soon as possible but no later than December 31, 2015. For non-Working Group dischargers, NPDES permit/WDR provisions will require compliance with the wasteload allocations as soon as possible after adoption of NPDES permits/WDRs that implement the TMDLs, but no later than December 31, 2015. The determination of what constitutes "as soon as possible" will be at the discretion of the Regional Board's Executive Officer.

Completion of the Work Plan and/or other investigations conducted by the Regional Board or others may result in modification of the TMDLs, wasteload allocations and the compliance schedule through the Basin Planning process. Subsequent issuance/revision of NPDES permit/WDRs will implement any such changes.

Ultimate compliance with permit limitations based on wasteload allocations is expected to be based upon iterative implementation of effective BMPs to manage the discharge of fine sediments containing organochlorine compounds, along with monitoring to measure BMP effectiveness.

Permit revisions shall be accomplished as soon as possible upon approval of these TMDLs. Given Regional Board resource constraints and the need to consider other program priorities, permit revisions are likely to be tied to renewal schedules.

For commercial nurseries covered under existing WDRs, revisions of these WDRs shall address the following identified needs:

- (1) Evaluation of sites to determine/verify potential storm water and nonstorm water discharge locations;
- (2) Evaluation of current monitoring programs and methods of sampling and analysis for consistency with other monitoring efforts in the watershed;
- (3) In cooperation with U.C. Cooperative Extension, evaluation of BMPs for adequacy and implementation of the most effective BMPs to reduce/eliminate the discharge of potentially-contaminated fine sediments in both storm water and non-storm water discharges;
- (4) Monitoring to better quantify nursery runoff as a potential source of organochlorine compounds and to assure that load reductions are achieved; and
- (5) Based on the results of the preceding tasks, development of a workplan to be submitted within one month of the effective date of these TMDLs that identifies: (a) the BMPs implemented to date and their effectiveness in reducing fine sediment and organochlorine compound discharges; (b) the adequacy and consistency of monitoring efforts, and proposed improvements; (c) a plan and schedule for implementation of revised BMPs and monitoring protocols, where appropriate. It is recognized that most nursery operations are likely to be of very limited duration due to the expiration of land leases. The workplan shall identify recommendations for BMP and monitoring improvements that are effective, reasonable and practicable, taking this consideration into account. This workplan shall be implemented upon approval by the Regional Board Executive Officer.

Revisions to the Municipal Separate Storm Sewer System (MS4) permit (R8-2002-0010, NPDES No. CAS618030) and monitoring program shall address the monitoring and BMP-related tasks identified below, as appropriate. These include: oversight and implementation of construction BMPs (Task 4); organochlorine compound source evaluations (Task 5); assessment of dredging feasibility and identification of a funding mechanism (Task 6); and, revision of the regional monitoring program (Task 8).

NPDES permits that regulate discharges of ground water to San Diego Creek or its tributaries shall be reviewed and revised as necessary to require annual (at a minimum) monitoring, using the most sensitive analytical techniques practicable, to analyze for organochlorine compounds in the discharges. If organochlorine compounds are found to be present, the dischargers shall be required to evaluate whether and to what extent the discharges would cause or contribute to an exceedance of wasteload allocations and to implement appropriate measures to reduce or eliminate organochlorine compounds in the discharges. New NPDES permits issued for these types of discharges shall incorporate the same requirements.

These dischargers (nurseries, MS4 permittees, ground water dischargers) may address the specific requirements identified above through their participation in the

development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7).

Task 2: Develop and Implement an Agricultural BMP and Monitoring Program

Apart from certain nurseries, agricultural operations in the watershed are not currently regulated pursuant to waste discharge requirements. The SWRCB's "Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program" (Nonpoint Source Policy) (2004) requires that all nonpoint source dischargers be regulated under WDRs, waivers of WDRs, Basin Plan prohibitions, or some combination of these three administrative tools. Board staff is developing recommendations for an appropriate regulatory approach to address agricultural discharges. It is expected that the Regional Board will be asked to consider these recommendations and to approve a regulatory approach in late 2007. Appropriate load allocations to implement these TMDLs will be included in WDRs or a waiver of WDRs, if and when issued by the Regional Board to address discharges from agricultural operations.

In the interim, agricultural operators shall identify and implement a monitoring program to assess OCs discharges from their facilities, and identify and implement a BMP program designed to reduce or eliminate those discharges. The proposed monitoring and BMP program shall be submitted as soon as possible but no later than (3 months from OAL approval of this Basin Plan Amendment (BPA)). These monitoring and BMP programs will be components of the waste discharge requirements or conditional waiver of waste discharge requirements that Board staff will recommend to implement the Nonpoint Source Policy. Load allocations identified in these TMDLs will also be specified in the WDRs/waiver, with a schedule of compliance.

It is recognized that most agricultural operations are expected to be of very limited duration due to the expiration of land leases. The monitoring and BMP programs proposed by the agricultural operators should include recommendations that are effective, reasonable and practicable, taking this consideration into account. The BMP and monitoring programs shall be implemented upon approval by the Regional Board. The BMP and monitoring programs may be implemented individually or by a group or groups of agricultural operators. In addition, responsible parties may address these BMP/monitoring program requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7). WDRs or conditional waivers of WDRs issued to agricultural operators pursuant to the Nonpoint Source Policy shall specify that for those operators who participate in the development and implementation of a Regional Board approved Work Plan, compliance with load allocations will not be required prior to the five-year completion of execution of the Work Plan. WDRs or conditional waivers of WDRs issued subsequent to the completion of execution of

the Work Plan will require compliance with load allocations as soon as possible but no later than December 31, 2015. Agricultural operators who elect not to participate in the Work Plan shall be required to achieve compliance "as soon as possible", as determined by the Executive Officer (see also Task 1).

Completion of the Work Plan and/or other investigations conducted by the Regional Board or others may result in modification of the TMDLs, load allocations and the compliance schedule through the Basin Planning process. Subsequent issuance/revision of WDRs/conditional waivers of WDRs will implement any such changes.

Task 3: Identify Parties Responsible for Open Space Areas; Develop and Implement an OCs Monitoring Program to Assess Open Space Discharges; Develop and Implement an OCs BMP Program, if Necessary

Nonpoint source discharges from open space are also subject to State regulation. During Phase I of these TMDLs, sufficient data shall be collected by the responsible parties to determine whether discharges of OCs from designated open space, as well as discharges resulting from erosion in and adjacent to unmodified streams, are causing or contributing to exceedances of water quality objectives and/or impairment of beneficial uses of San Diego Creek and Newport Bay. With the assistance of the stakeholders, Regional Board staff will identify the responsible parties as soon as possible but no later than (*one month from OAL approval of this BPA*). Board staff will notify the identified responsible parties of their obligation to propose an organochlorine compound monitoring program within two months of notification. The monitoring program shall be implemented upon Regional Board approval.

Based on the results of this monitoring program, the responsible parties shall develop a BMP implementation plan within 6 months of notification by the Regional Board's Executive Officer of the need to do so. The responsible parties shall implement that plan upon Regional Board approval.

The responsible parties may address these monitoring and BMP implementation program requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7).

The Regional Board will consider whether WDRs or a WDR waiver is necessary and appropriate for responsible parties not currently regulated, based on the monitoring results. WDRs or a WDR waiver, if issued, will include appropriate load allocations to implement these TMDLs. For responsible parties participating in the Working Group, compliance with these load allocations will not be required prior to the five year completion of execution of the Work Plan. WDRs/WDR waivers issued to Working Group members subsequent to completion of execution of the Work Plan will require compliance with load allocations as soon as possible but no later than

December 31, 2015. Responsible parties not participating in the Work Plan will be required to meet the load allocations as soon as possible, as determined by the Executive Officer.

Completion of the Work Plan and/or other investigations conducted by the Regional Board or others may result in modification of the TMDLs, load allocations and the compliance schedule through the Basin Planning process. Subsequent issuance/revision of WDRs/conditional waivers of WDRs will implement any such changes.

Task 4: Develop and Implement Appropriate BMPs for Construction Activities

Currently, all construction activities in the watershed are regulated under the State Water Resource Control Board's (SWRCB) General Permit for Discharge of Storm Water Runoff Associated with Construction Activity (Order No. 99-08-DWQ, NPDES No. CAS000002; the "General Construction Permit"), and/or the MS4 NPDES permit. The requirements of these permits and an iterative, adaptive-management BMP approach, coupled with monitoring, are the foundation for meeting the TMDL WLAs for construction. Both the General Construction Permit and the MS4 permit are expected to be revised over time. The specific tasks identified below may be addressed by revisions to one or both of these permits. In that case, the Regional Board will integrate requirements for implementation of this Task with the requirements of the MS4/General Construction permit so as to prevent conflict and/or duplication of effort.

To assure that effective construction BMPs are identified and implemented, program improvements are needed in the following areas: (a) Storm Water Pollution Prevention Plans (SWPPPs) prepared in response to the General Construction Permit must include supporting documentation and assumptions for selection of sediment and erosion control BMPs, and must state why the selected BMPs will meet the Construction WLAs for the organochlorine compounds; (b) SWPPP provisions must be rigorously implemented on construction sites; (c) sampling and analysis for the organochlorine pesticides and PCBs in storm and nonstorm discharges containing sediment from construction sites is necessary to determine the efficacy of BMPs, as well as compliance with the construction WLAs; sampling and analysis plans must be included in SWPPPs; (d) additional BMPs, including enhanced BMPs, must be evaluated to determine those that may be appropriate for reducing or eliminating organochlorine compound discharges from construction sites (e.g., BMPs effective in control of fine particulates); (e) outreach and training are necessary to communicate these SWPPP requirements and assure their effective implementation; and (e) enforcement of the SWPPP requirements is necessary.

To address these program improvements, Regional Board staff shall develop a SWPPP Improvement Program that identifies the Regional Board's expectations with respect to the content of SWPPPs, including documentation regarding the selection and implementation of BMPs, and a sampling and analysis plan. The

Improvement Program shall include specific guidance regarding the development and implementation of monitoring plans, including the constituents to be monitored, sampling frequency and analytical protocols. The SWPPP Improvement Program shall be completed by *(the date of OAL approval of this BPA)*. No later than two months from completion of the Improvement Program, Board staff shall assure that the requirements of the Program are communicated to interested parties, including dischargers with existing authorizations under the General Construction Permit, and provide training as necessary. Existing, authorized dischargers shall revise their project SWPPPs as needed to address the Program requirements as soon as possible but no later than *(three months of completion of the SWPPP Improvement Program)*. Upon completion of needed outreach and training concerning the requirements of the SWPPP Improvement Program, applicable SWPPPs that do not adequately address the Program requirements shall be considered inadequate and enforcement shall proceed accordingly. The MS4 permit shall be revised as needed to assure that the permittees communicate the Regional Board's SWPPP expectations, based on the SWPPP Improvement Program, with the Standard Conditions of Approval.

The MS4 permittees shall conduct studies to evaluate BMPs that are most appropriate for reducing or eliminating organochlorine compound discharges from construction sites (e.g., fine particulates), including advanced treatment BMPs. MS4 Permittees shall include these BMPs in the Orange County Stormwater Program Construction Runoff Guidance Manual. Implementation of these MS4 permittee requirements shall commence upon issuance of appropriate Water Code Section 13267 letters or approval of an appropriately revised MS4 permit, whichever occurs first. Revisions to the MS4 permit shall implement requirements specified in applicable Section 13267 letters, if used to implement TMDL-related requirements. The Section 13267 letters/revised permit shall require the permittees to: (a) submit a proposed plan and schedule for studies to evaluate appropriate BMPs, as described above, within three months of issuance of the 13267 letter or permit revision; (b) implement the plan and schedule upon approval by the Regional Board's Executive Officer; (c) submit a report of the BMP investigations within 6 months of approval of the study plan. The report shall include a proposed plan and schedule for implementation of the BMPs, as appropriate, and inclusion of the BMPs in the Orange County Guidance Manual; (d) implement the BMP plan upon approval by the Executive Officer.

The MS4 permittees may address these SWPPP and construction site BMP-related requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7).

**Task 5: Evaluate Sources of OCs to San Diego Creek and Newport Bay:
Identify and Implement Effective BMPs to Reduce/Eliminate Sources**

Based on the regional monitoring program being implemented by the MS4 permittees and/or on the results of other monitoring and investigations, the MS4 permittees shall conduct source analyses in areas tributary to the MS4 demonstrating elevated concentrations of OCs. Based on mass emissions monitoring (described below) and source analysis, the permittees shall implement additional/enhanced BMPs as necessary to ensure that organochlorine discharges from significant land use sources to surface waters are reduced or eliminated. As part of the investigation task, if the results indicate that additional OCs soil remediation is necessary on MCAS Tustin and MCAS El Toro, the responsible parties for such remediation will be identified. The responsible party will be tasked to implement those portions of the BMP plan identified for the responsible party for MCAS Tustin and MCAS El Toro.

The permittees shall develop and implement a collection program for all banned OC pesticides and PCBs. This type of program has had demonstrated success in other geographic areas in collecting and disposing of banned pesticides. Residents and businesses in the watershed may have stored legacy pesticides that could be collected through such a program; if this is the case, this task would prevent future use and improper disposal of these banned pesticides.

Implementation of these requirements shall commence upon issuance of appropriate Water Code Section 13267 letters or approval of an appropriately revised MS4 permit, whichever occurs first. Revisions to the MS4 permit shall implement requirements specified in applicable Section 13267 letters, if used to implement TMDL-related requirements. The 13267 letters/revised permit shall specify require the permittees to: (a) submit a proposed plan and schedule for source analyses of MS4 tributary areas with elevated OCs concentrations within 3 months of issuance of the 13267 letters or permit revision; (b) implement the proposed plan upon approval by the Regional Board's Executive Officer; (c) submit a report within 6 months of completion of the approved study plan. The report shall provide the study results and include a proposed plan and schedule for prioritized implementation of BMPs in OCs source areas; (d) implement the BMP plan upon Executive Officer approval.

The permittees may address these requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (Task 7).

Task 6: Evaluate Feasibility and Mechanisms to Fund Future Dredging Operations

Because large-scale erosion and sedimentation primarily occurs during large storm events, traditional BMPs may have limited success in reducing/eliminating the discharge of potentially-contaminated sediments to receiving waters during wet weather. In such cases, dredging within Newport Bay and/or San Diego Creek may

be the most feasible and appropriate method of reducing OCs loads in these waters. However, the feasibility and effectiveness of dredging projects in removing OCs would require careful consideration, since dredging may or may not expose sediments with higher concentrations of OCs. Financing of such projects is also a significant consideration.

Entities discharging potentially contaminated sediment in the watershed shall analyze the feasibility of dredging to achieve water quality standards, and shall identify funding mechanisms for ensuring that future dredging operations can be performed, as necessary, within San Diego Creek, Upper and Lower Newport Bay. A report that presents the results of this effort shall be submitted no later than (*three years from the date of OAL approval of this BPA*). It is recognized that dredging activities are likely to be an integral part of efforts to comply with other established TMDLs, particularly the sediment TMDL. Ideally, dredging feasibility and funding investigations would be integrated with implementation and review of the sediment TMDL through the comprehensive Work Plan (Task 7). The responsible parties may address this Task requirement through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan.

Task 7: Develop a Comprehensive Work Plan to Meet TMDL Implementation Requirements, Consistent with the Adaptive Management Approach

During the development of these organochlorine compounds TMDLs, regulated stakeholders in the Newport Bay watershed expressed concerns that the numeric targets used to develop the TMDLs, wasteload allocations and load allocations were flawed and that scientific review by an independent panel of experts was necessary. Further, these stakeholders suggested that pollutants other than the organochlorine compounds, such as metals, pyrethrins or other, emerging pollutants may pose the more real or significant threat to beneficial uses in the watershed. Finally, it was recommended that an integrated approach to TMDL implementation, as well as development of pending TMDLs and refinement of established TMDLs, would be a more effective and efficient approach.

Substantial efforts are already being made by many stakeholders in the watershed to address established permit and/or TMDL requirements for BMP implementation and monitoring and to conduct special investigations to understand and improve water quality conditions in the watershed. Thus, the framework exists to develop a comprehensive watershed plan for addressing water quality, not only as it relates to the organochlorine compounds, but on a larger scale that encompasses all sources of water quality impairment.

This implementation plan provides the opportunity for regulated stakeholders to form a Working Group and to participate in the development and implementation of a comprehensive Work Plan to evaluate the scientific basis of these organochlorine TMDLs, to prioritize TMDL implementation tasks, to integrate implementation with

other TMDL and/or permit requirements, and to investigate unknown sources of toxicity in the watershed. As noted in the previous Task descriptions, participation by responsible parties in the Working Group and the development and implementation of a Regional Board Work Plan would address the responsible parties' obligations pursuant to the Tasks in Table NB-OCs-13. Dischargers who elect not to participate in the Working Group/Work Plan will be required to implement these Tasks, as described above.

Dischargers interested in participating in a Working Group to develop and implement a comprehensive Work Plan must commit to do so by (*within one month of OAL approval of the BPA*). Submittal of a draft Work Plan is required no later than (*three months of OAL approval of the BPA*). The schedules for implementation of the tasks identified in the Work Plan must reflect the shortest practicable time necessary to complete the tasks. Implementation of the Work Plan will commence upon approval of the Work Plan by the Regional Board at a properly noticed public hearing. Execution of the Work Plan must be complete within five years of Regional Board approval. Substantive changes to the tasks and schedules included in the approved Work Plan are contingent on Regional Board approval at a subsequent, properly noticed public hearing(s). However, the Regional Board's Executive Officer is authorized to revise the approved tasks and schedules if no significant comments are received during the public notice period.

At a minimum, the expected result of the execution of the Work Plan is a comprehensive, watershed plan for BMP implementation, monitoring, special investigations and other actions that will assure compliance with the OCs TMDLs, as they may be amended, as soon as possible after completion of execution of the Work Plan but no later than December 31, 2015².

The specific detailed tasks and schedules will be determined as the Work Plan is developed. Regional Board staff will work with the Working Group to identify a suitable Work Plan. Key initial tasks are expected to include the following:

1. Convene an Independent Advisory Panel (IAP) of experts with relevant expertise. To avoid questions of objectivity, the panel shall be convened by a neutral third party organization such as the National Water Research Institute. The Working Group and Regional Board staff will work together to define the desired qualifications needed for IAP participants, define the scope and authority of the IAP, and identify and describe the primary issues that will require guidance, recommendations, or specific actions from the IAP.

2. Re-evaluate OCs TMDLs Numeric Targets and Loads

With input and recommendations from the IAP, and using data being generated through ongoing scientific investigations in the watershed, the Work Plan should assess the current OCs TMDLs numeric targets, evaluate

² This compliance date is subject to change through the Basin Planning process.

potential alternative numeric targets, and determine if the current targets should be revised, or whether targets based on site-specific data can be developed. If site-specific targets can be developed, the process or methods that will be used to develop targets should be determined, such as risk assessments or re-calculation of targets using accepted, peer-reviewed scientific methodologies.

It is recognized that there is a need for flexibility to respond to unanticipated findings and events, and to changes that may be recommended by the Independent Advisory Panel (see below). However, at a minimum, the Tasks identified in Table NB-OCs-13 must be considered in Work Plan development and implementation. In addition, consideration shall be given to the following:

Develop conceptual models

Data interpretation and monitoring must be organized around a systematic conceptual view of the sources of the different organochlorine compounds and their distribution and behavior in the watershed. Development of conceptual models for these compounds would significantly enhance our understanding of their sources and impacts and would help to structure hypothesis development, monitoring design, and data interpretation. Development of the conceptual models should be based on a review of available data and information about the OCs in the watershed, and the models should be updated as new information accumulates. Characterization of sources and of habitats at risk should be based on a review of available data, framed in terms of the conceptual models and supported with the collection of new data as needed. It is expected that the IAP would provide critical review and recommendations in this process.

Develop Information Management System

Different types of data – water column, sediment, fish or bird egg tissue, infaunal surveys, hydrology, etc. – are being or will be collected throughout the Newport Bay watershed through a variety of studies, monitoring programs, or other projects. Since these data are often collected for different purposes (e.g., in response to various TMDLs and/or permits), at different times and in different areas, much of the data may be in non-comparable formats, redundant, or not spatially or temporally compatible. In order to determine what data are useful or significant, where data gaps may still occur, or where current data needs are sufficient, a comprehensive information management system should be developed that (1) establishes clear procedures for assessing data quality for data acquisition and transfer and for control of evolving versions of datasets; (2) is a relational database that can manage the variety of data types and has appropriate mechanisms for ensuring and maintaining data quality; (3) can conduct quality control checks and needed reformatting to ensure needed consistency across all data types

and sources as data from other sources are obtained; (4) provides for straightforward query and data sub-setting routines to streamline access to the data; and (5) ensures that GIS capability is available for analysis, modeling, and presentation purposes. Development of a comprehensive information management system will allow for the identification of significant data gaps that need to be addressed and will provide a vehicle for establishing monitoring guidelines and preventing redundant or superfluous data collection.

To the extent that there are any conflicts between the individual tasks and schedules identified above, and the prioritized plan and schedule identified in the Work Plan, the Work Plan would govern implementation activities with respect to the stakeholders responsible for Work Plan development and implementation as part of the Working Group.

Task 8: Revise Regional Monitoring Program

The County of Orange, as Principal Permittee under the County's MS4 permit, oversees the countywide monitoring program. Implementation of the monitoring program is supported by funds shared proportionally by each of the Permittees. Some monitoring requirements identified in this implementation plan are already reflected in the current program.

By (3 months from OAL approval of BPA), the MS4 permittees shall: (1) document each of the current monitoring program elements that addresses the monitoring requirements identified in the preceding tasks; and, (2) revise the monitoring program as necessary to assure compliance with these monitoring requirements.

Review of/revisions to the monitoring program shall address:

- (1) Estimation of mass emissions of chlordane, DDT, PCBs and toxaphene.
- (2) Determination of compliance with MS4 wasteload allocations for Upper and Lower Newport Bay, and of status of achievement with the informational wasteload allocations for San Diego Creek for chlordane and PCBs.
- (3) Assessment of temporal and spatial trends in organochlorine compound concentrations in water, sediment and tissue samples.
- (4) Semi-annual sediment monitoring in San Diego Creek and Newport Bay. Measurements of sediment chemistry in these waters should be evaluated with respect to evidence of biological effects, such as toxicity and benthic community degradation.
- (5) Evaluation of organochlorine bioaccumulation and food web biomagnification
- (6) Assessment of the degree to which natural attenuation is occurring in the watershed.

Accurately quantifying the very small mass loads that are allowable under these TMDLs will be very challenging; analytical strategies for quantifying loads of the organochlorine compounds must be carefully explored.

Revisions to the monitoring program shall take into consideration the following recommendations provided by members of the Organochlorine Compounds TMDL Technical Advisory Committee (TAC):

- (1) The analytical parameters measured need to be established for each matrix of interest (e.g., sediment, tissue, ambient water). The representative list of compounds to be measured needs to be identified (e.g., what chlordane compounds will be measured and summed to represent "total chlordane;" will PCB congeners be measured and summed or will Aroclors?).
- (2) Data quality will need to be consistent with the State's Surface Water Ambient Monitoring Program (SWAMP). Detection limits, accuracy and precision of analytical methods should be adequate to assure the goals of the monitoring efforts can be achieved.
- (3) Bioaccumulation/biomagnification in high trophic level predators may not immediately respond to load reductions; appropriate time scales and schedules for monitoring that are supported by empirical data and/or modeling should be established.
- (4) Sentinel fish and wildlife species should be selected for monitoring based on home range, life history, size and age.

MS4 permittees may address the requirements specified herein by participation in the Working Group and development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7).

Task 9: Conduct Special Studies

The following special studies should be conducted, in addition to the studies already underway in the watershed. This list is based, in part, on recommendations of the technical advisory committee for the organochlorine compounds TMDLs. These studies will be implemented as resources become available, and the results will be used to review and revise these TMDLs. Stakeholder contributions to these investigations are encouraged and would facilitate review of the TMDLs.

- (1) Evaluation of sediment toxicity in San Diego Creek and tributaries, and Upper and Lower Newport Bay.

Previous studies have included Toxicity Identification Evaluations (TIEs) that have yielded inconclusive results as to the cause of toxicity in Newport Bay. Sediment toxicity within San Diego Creek is not well-documented or well-understood. There is evidence that pyrethroid compounds may be a significant contributor. In determining

the extent to which nonpolar organic compounds are causing or contributing to sediment toxicity, the differential contribution of both the organochlorine compounds and pyrethroids should be determined to assure that control actions are properly identified and implemented. Monitoring should be performed year-round at multiple locations within San Diego Creek and Newport Bay (to encompass spatial and temporal variability), and should include various land use types in order to quantify the relative contributions from various sources.

(2) Refinement of sediment and tissue targets.

A study is being conducted by the San Francisco Estuary Institute to develop indicators and a framework for assessing the indirect effects of sediment contaminants. The objective is to provide methodology that will assist in evaluating indirect adverse biological effects for bioaccumulative pollutants (e.g. due to food web biomagnification), as part of the overall goal of developing statewide sediment quality objectives. Newport Bay is being used as a case study to show how the proposed methodology could be implemented on a screening level. Multiple lines of evidence will be evaluated to determine impacts of organochlorine pesticides and PCBs to humans and wildlife. A conceptual foodweb model will be developed, and sensitive wildlife receptors will be identified. Empirical field data and a steady-state food web model will be used to calculate bioaccumulation factors for the organochlorine compounds. The bioaccumulation factors will be combined with effects thresholds to identify sediment concentrations that are protective of target wildlife and humans.

Once completed by SFEI, a thorough evaluation of the Newport Bay case study needs to be initiated, and any additional analyses required for a more in-depth risk analysis should be identified and completed. Protective sediment and tissue targets for indirect effects to humans and wildlife should be developed by the time the TMDLs are re-opened. Furthermore, once TIEs have identified the likely toxicant(s) responsible for sediment toxicity in San Diego Creek and Newport Bay (direct effects), field and laboratory studies should be conducted in order to determine bioavailability and the dose-response relationship between sediment concentrations and biologic effects.

(3) Evaluation of regional BMPs (e.g., constructed wetlands and sediment detention basins) for mitigating potential adverse water quality impacts of sediment-associated pollutants (e.g., OCs, pyrethroids).

Large-scale, centralized BMPs such as constructed wetlands and storm water retention basins may be more effective than project-level BMPs in reducing adverse environmental impacts of sediment-borne pollutants. Regional BMPs are either being planned or are in place within the watershed (e.g., IRWD NTS). Their potential effectiveness for capturing the organochlorine compounds and mitigating impacts needs to be evaluated.

- (4) Improvement in linkage between toxaphene measured in fish tissue and toxaphene in bed sediments.

The toxaphene impairment listing for San Diego Creek is based on fish tissue exceedances that have no measured linkage with toxaphene in sediments. While sediment is the primary TMDL target for these TMDLs, toxaphene is usually not detected in sediment. Because of its chemical complexity, there is a large degree of analytical uncertainty with measurements of toxaphene in environmental samples that use standard methods (e.g., EPA Method 8081a), especially at low levels. Confirmations of toxaphene in fish and sediment samples in San Diego Creek (and possibly Newport Bay) using other techniques (e.g., GC-ECNI-MS or MS/MS) is recommended.

- (5) Evaluation of relative importance of continuing OCs discharges to receiving waters through erosion and sedimentation processes, versus recirculation of existing contaminated bed sediments, in causing beneficial use impairment in San Diego Creek and Newport Bay.

This study should allow for determination of the most effective implementation strategies to reduce organochlorine compounds in the MS4 and other receiving waters.

Phase II Implementation

Task 10: TMDL Reopener

These TMDLs will be reopened no later than *(five (5) years following OAL approval of this BPA)* in order to evaluate the effectiveness of Phase I implementation. At that time, all new data will be evaluated and used to reassess impairment, BMP effectiveness, and whether modifications to the TMDLs are warranted. If BMPs implemented during Phase I have been shown to be ineffective in reducing levels of organochlorine compounds, then more stringent BMPs may be necessary during Phase II implementation.

Implementation of these TMDLs and the schedule for implementation are very closely tied with other TMDLs that are currently being implemented in the watershed. The sediment TMDL allowable load for San Diego Creek was the basis for calculating organochlorine compound loading capacities. The sediment TMDL is scheduled for revision in 2007; changes to the sediment TMDLs will likely necessitate changes to these organochlorine compounds TMDLs as well.

Attachment B

Excerpt - Revised OCs TMDLs Basin Plan Amendment

(Revisions to amendment proposed on December 1, 2006)

Note: Additions are underlined; deletions are shown in strike-out type

**Table NB-OCs-8. Informational TMDLs for San Diego Creek and Tributaries
(expressed on average daily and annual bases)**

Water Body	Pollutant	TMDL (average grams per day)
San Diego Creek and Tributaries	Chlordane	0.70
	Total PCBs	0.34 <u>0.34</u>
		TMDL (grams per year)
San Diego Creek and Tributaries	Chlordane	255
	Total PCBs	444 <u>125</u>

Wasteload and load allocations to achieve the TMDLs specified in Tables NB-OCs-6 and NB-OCs-7 are shown in Tables NB-OCs-9 and NB-OCs-10, respectively. Like the TMDLs, the allocations are expressed in terms of both average daily and annual loads. An explicit margin of safety (MOS) of ten percent was applied in calculating the allocations. Consistent with the TMDL compliance schedule, these allocations are to be achieved as soon as possible but no later than December 31, 2015.

Wasteload and load allocations necessary to meet the informational TMDLs shown in Table NB-OCs-8 are identified in Tables NB-OCs-11 (expressed as average daily loads) and NB-OCs-12 (expressed as annual loads). These allocations are identified only for informational purposes.

Table NB-OCs-9. TMDLs and Allocations for San Diego Creek, Upper and Lower Newport Bay (expressed on a “daily” basis to be consistent with the recent D.C. Circuit Court of Appeals decision in *Friends of the Earth, Inc. v. EPA, et al., No. 05-5015 [D.C. Cir.2006]*).^{a,b}

	Type	Total DDT	Chlordane	Total PCBs	Toxaphene
		(average grams/day)			
San Diego Creek					
WLA	Urban Runoff – County MS4 (36%)	0.35			0.005
	Construction (28%)	0.27			0.004
	Commercial Nurseries (4%)	0.04			0.001
	Caltrans MS4 (11%)	0.11			0.002
	Subtotal – WLA (79%)	0.77			0.01
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.05			0.001
	Open Space (9%)	0.09			0.001
	Streams & Channels (2%)	0.02			0.0003
	Undefined (5%)	0.05			0.001
	Subtotal – LA (21%)	0.21			0.003
MOS (10% of total TMDL)		0.11			0.002
Total TMDL		1.08			0.02
Upper Newport Bay					
WLA	Urban Runoff - County MS4 (36%)	0.14	0.08	0.08	
	Construction (28%)	0.11	0.06	0.06	
	Commercial Nurseries (4%)	0.02	0.01	0.01	
	Caltrans MS4 (11%)	0.04	0.03	0.02	
	Subtotal – WLA (79%)	0.31	0.18	0.18	
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.02	0.01	0.01	
	Open Space (9%)	0.04	0.02	0.02	
	Streams & Channels (2%)	0.01	0.005	0.005	
	Undefined (5%)	0.02	0.01	0.01	
	Subtotal – LA (21%)	0.08	0.05	0.05	
MOS (10% of Total TMDL)		0.04	0.03	0.03	
Total TMDL		0.44	0.25	0.25	
Lower Newport Bay					
WLA	Urban Runoff – County MS4 (36%)	0.05	0.03	0.21	
	Construction (28%)	0.04	0.02	0.17	
	Commercial Nurseries (4%)	0.01	0.003	0.02	
	Caltrans MS4 (11%)	0.02	0.01	0.07	
	Subtotal – WLA (79%)	0.11	0.07	0.47	
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.01	0.004	0.03	
	Open Space (9%)	0.01	0.01	0.05	
	Streams & Channels (2%)	0.003	0.002	0.01	
	Undefined (5%)	0.01	0.004	0.03	
	Subtotal – LA (21%)	0.03	0.02	0.12	
MOS (10% of Total TMDL)		0.02	0.01	0.07	
Total TMDL		0.16	0.09	0.66	

^a Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the Total TMDL.

Percent WLA and Percent LA add to 100%.

^b Compliance to be achieved as soon as possible but no later than December 31, 2015.

Table NB-OCs-10. TMDLs and Allocations (Annual) for San Diego Creek, Upper and Lower Newport Bay (expressed on an “annual” basis for implementation purposes).^{a,b}

		Total DDT	Chlordane	Total PCBs	Toxaphene
Type		(grams per year)			
San Diego Creek					
WLA	Urban Runoff – County MS4 (36%)	128.3			1.9
	Construction (28%)	99.8			1.5
	Commercial Nurseries (4%)	14.3			0.2
	Caltrans MS4 (11%)	39.2			0.6
	Subtotal – WLA (79%)	281.6			4.3
LA	Agriculture (5%) (excludes nurseries under WDRs)	17.8			0.3
	Open Space (9%)	32.1			0.5
	Streams & Channels (2%)	7.1			0.1
	Undefined (5%)	17.8			0.3
	Subtotal – LA (21%)	74.8			1.1
MOS (10% of Total TMDL)		40			0.6
Total TMDL		396			6
Upper Newport Bay					
WLA	Urban Runoff – County MS4 (36%)	51.8	30.1	29.8	
	Construction (28%)	40.3	23.4	23.2	
	Commercial Nurseries (4%)	5.8	3.3	3.3	
	Caltrans MS4 (11%)	15.8	9.2	9.1	
	Subtotal – WLA (79%)	113.8	66.1	65.4	
LA	Agriculture (5%) (excludes nurseries under WDRs)	7.2	8	7	
	Open Space (9%)	13.0	7.6	7.5	
	Streams & Channels (2%)	2.9	1.7	1.7	
	Undefined (5%)	7.2	4.2	4.2	
	Subtotal – LA (21%)	30.2	21.4	20.3	
MOS (10% of Total TMDL)		16	9	9	
Total TMDL		160	93	92	
Lower Newport Bay					
WLA	Urban Runoff – County MS4 (36%)	19.1	11.0	78.1	
	Construction (28%)	14.9	8.6	60.7	
	Commercial Nurseries (4%)	2.1	1.2	8.7	
	Caltrans MS4 (11%)	5.8	3.4	23.9	
	Subtotal – WLA (79%)	41.9	24.2	171.4	
LA	Agriculture (5%) (excludes nurseries under WDRs)	2.7	1.5	10.8	
	Open Space (9%)	4.8	2.8	19.5	
	Streams & Channels (2%)	1.1	0.6	4.3	
	Undefined (5%)	2.7	1.5	10.8	
	Subtotal – LA (21%)	11.2	6.4	45.5	
MOS (10% of Total TMDL)		5.9	3.4	24	
Total TMDL		59	34	241	

^a Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the total TMDL. Percent WLA and Percent LA add to 100%.

^b Compliance to be achieved as soon as possible but no later than December 31, 2015.

Table NB-OCs-11. Informational TMDLs and Allocations for San Diego Creek (expressed on a “daily” basis).^a

Category	Type	Chlordane	Total PCBs
		(average grams per day)	
San Diego Creek			
WLA	Urban Runoff – County MS4 (36%)	0.23	0.11
	Construction (28%)	0.23 0.18	0.10 0.09
	Commercial Nurseries (4%)	0.18 0.03	0.08 0.01
	Caltrans MS4 (11%)	0.03 0.07	0.01 0.03
	Subtotal – WLA (79%)	0.07 0.50	0.03 0.24
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.50 0.03	0.22 0.02
	Open Space (9%)	0.03 0.06	0.01 0.03
	Streams &Channels (2%)	0.06 0.01	0.03 0.01
	Undefined (5%)	0.01 0.03	0.01 0.02
	Subtotal – LA (21%)	0.03 0.13	0.01 0.08
MOS (10% of total TMDL)		0.13 0.07	0.06 0.03
Total TMDL		0.07 0.70	0.03 0.34

^a Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the Total TMDL.. Percent WLA and Percent LA add to 100%.

Table NB-OCs-12. Informational TMDLs and Allocations (Annual) for San Diego Creek (expressed on an “annual” basis)^a.

Category	Type	Chlordane	Total PCBs
		(grams per year)	
San Diego Creek			
WLA	Urban Runoff – County MS4 (36%)	82.6	36.9 40.5
	Construction (28%)	64.3	28.7 31.5
	Commercial Nurseries (4%)	9.2	4.1 4.5
	Caltrans MS4 (11%)	25.2	11.3 12.4
	Subtotal – WLA (79%)	181.3	81.1 88.9
LA	Agriculture (5%) (excludes nurseries under WDRs)	11.5	5.1 5.6
	Open Space (9%)	20.7	9.2 10.1
	Streams & Channels (2%)	4.6	2.1 2.3
	Undefined (5%)	11.5	5.1 5.6
	Subtotal – LA (21%)	48.2	21.5 23.6
MOS (10% of total TMDL)		26	11 13
Total TMDL		255	114 125

^a Percentages for WLA (79%) and LA (21%) are applied to the TMDL, after subtracting the 10% MOS from the total TMDL. Percent WLA and Percent LA add to 100%.

4.b.3. Implementation of Organochlorine Compounds TMDLs

These TMDLs are to be implemented within an adaptive management framework, with compliance monitoring, special studies, and stakeholder interaction guiding the process over time. Information obtained from compliance monitoring will measure progress toward achievement of WLAs and LAs, potentially leading to changes to TMDL allocations; ongoing investigations and recommended special studies, if implemented, may provide information that leads to revisions of the TMDLs, adjustments to the implementation schedule, and/or improved implementation strategies. Thus, implementation of the TMDLs is expected to be an ongoing and dynamic process.

The implementation plan identified in this section reflects the adaptive management, phased approach to the organochlorine compound TMDLs adopted by the Regional Board. The Board found a phased approach, with compliance schedules, appropriate in light of the following considerations. First, it was recognized that additional monitoring and special studies were either already underway or would be needed to address data limitations and significant uncertainty associated with the TMDL calculations, and that changes to the TMDLs might be appropriate based on the results of those investigations. Second, it was also understood that these data limitations and uncertainties pertained to the impairment assessment itself and the determination of the specific organochlorine compounds for which TMDLs are required. Third, the natural attenuation of these compounds over time is expected to affect significantly the selection, development and implementation of TMDLs. As described in the TMDL technical report [Ref.1], use of the organochlorine compounds addressed by these TMDLs has been banned for many years and trend analyses indicate declining concentrations of these substances in fish tissue over time. Natural attenuation should eventually reduce organochlorine pollutant levels to concentrations that pose no threat to beneficial uses in San Diego Creek or Newport Bay. While natural degradation of these compounds is likely the principal cause of the observed decline in fish tissue concentrations, the implementation of erosion and sediment controls and other Best Management Practices to address compliance with the sediment and nutrient TMDLs for Newport Bay and its watershed (see discussions of these TMDLs elsewhere in this Basin Plan) is a probable factor. In any case, the observed trends suggest that as monitoring continues in the watershed and pollutant levels decline, some or all of the organochlorine compounds may warrant delisting from the Clean Water Act Section 303(d) list of impaired waters. Again, these TMDLs would need to be revisited accordingly.

This implementation plan also reflects recommendations by regulated stakeholders in the Newport Bay watershed to convene a Working Group to develop and implement a comprehensive Work Plan to: address, as an early action item, the technical uncertainties in these TMDLs and make

recommendations for revisions, as appropriate; identify and prioritize tasks necessary to implement the TMDLs; integrate TMDL implementation tasks with those already being conducted in response to other programs (e.g., permits, other TMDLs); and, investigate other pollutants of concern in the watershed.

Table NB-OCs-13 lists the tasks and schedules needed to implement the organochlorine TMDLs. This Implementation Plan is aimed at identifying actions to accelerate the decline in organochlorine compound concentrations in the watershed, and to augment their natural attenuation. The implementation plan is focused to a large extent on the monitoring and, where necessary, enhanced implementation of Best Management Practices (BMPs) to reduce the erosion and transport to surface waters of fine sediment to which the organochlorine compounds tend to adhere. Many of these BMPs are already in place as the result of existing permits issued by the Regional Board or State Water Resources Control Board for stormwater and construction activities, and/or in response to established TMDLs. The intent is to assure that source control activities are implemented to reduce any active sources of the organochlorine compounds, and in other areas where such actions will be most effective in meeting the TMDL goals. Monitoring and special study requirements are included to provide for TMDL compliance assessment and refinement.

In response to the recommendation by watershed stakeholders, this implementation plan provides an opportunity for dischargers to participate in the development and implementation of a comprehensive Work Plan. It is expected that the implementation tasks identified in Table NB-OCs-13 will be considered in the development of the Work Plan and incorporated, as appropriate. Implementation of the Work Plan, which will be approved by the Regional Board at a public hearing, will obviate the need for individual actions on the tasks in Table NB-OCs-13 by members of the Working Group. Completion of the Work Plan will result, in part, in recommendations for revisions to these TMDLs based on review by an Independent Advisory Panel and the results of ongoing or requisite monitoring and investigations, and in the development of a comprehensive plan for BMPs and other actions needed to assure compliance with the TMDLs, wasteload allocations and load allocations as soon as possible after completion of execution of the Work Plan but no later than December 31, 2015¹. Dischargers who elect not to participate in the Work Plan approach will be required to implement the tasks shown in Table NB-OCs-13, as appropriate.

Each of the tasks identified in Table NB-OCs-13 is described below.

¹ This compliance schedule and/or the organochlorine compounds TMDLs may be modified, through the Basin Planning process, in response to information provided by implementation of the Work Plan tasks and/or other investigations.

Table NB-OCs-13. Organochlorine Compounds TMDLs Implementation Tasks and Schedule

Task	Description	Compliance Date – As Soon As Possible But No Later Than
PHASE I IMPLEMENTATION		
1	Revise existing WDRs and NPDES permits: <i>Commercial Nursery WDRs, MS4 Permit, Other NPDES Permits</i>	Upon OAL State approval of BPA and permit renewal
2 ^a	a. Develop proposed agricultural BMP and monitoring program to assess and control OCs discharges. b. Implement program	a. (3 months after OAL State approval of BPA) b. Upon Regional Board approval
3 ^a	a. Identify responsible parties for open space areas b. Develop proposed monitoring program to assess OCs inputs from open space areas c. Implement proposed monitoring program <u>d. Develop plan to implement effective erosion and sediment control BMPs for management of fine particulates (if found necessary based on monitoring results)</u> <u>e. Implement BMP plan</u>	a. (1 month after OAL State approval of BPA) b. 2 months after notification of responsible parties c. Upon Regional Board approval <u>d. Within 6 months of notification of need to develop plan</u> <u>e. Upon Regional Board approval</u>
4 ^a	Implement effective sediment and erosion control BMPs for management of fine particulates on construction sites: Regional Board: a. Develop SWPPP Improvement Program b. Conduct outreach/training programs MS4 permittees: c. Revise planning processes as necessary to assure proper communication of SWPPP requirements d. Evaluate/implement BMPs effective in reducing/eliminating organochlorine discharges: <u>i. Submit proposed plan and schedule for BMP studies and implement plan</u> <u>ii. Submit studies report; including plan and schedule to implement BMPs/include in Guidance</u>	a. (Upon OAL State approval of BPA) b. (Two months of OAL State approval of BPA) c and d: <u>Within 3 months of</u> Upon appropriate revision of the MS4 permit <u>d: i. Submit plan within 3 months of 13267 letter issuance/MS4 permit revision and implement upon Executive Officer approval; ii. Within 6 months of completion of studies plan; iii. Upon Executive Officer approval</u>

Manualiii. Implement BMPs/include in Guidance Manual

- 5^a Evaluate sources of OCs; develop and implement BMPs accordingly:
- a. Submit proposed plan and schedule for source area investigations
 - b. Implement investigation plan
 - c. Submit report of investigation findings and plan/schedule for implementation of BMPs
 - i. Identify responsible parties for soils remediation at MCAS Tustin and MCAS El Toro, if necessary based on investigation plan results.
 - d. Implement BMP plan
- 6^a Evaluate feasibility and mechanisms to fund future dredging operations within San Diego Creek, Upper and Lower Newport Bay
- 7 Develop comprehensive Work Plan to meet TMDL implementation requirements, consistent with an adaptive management approach
- a. Convene Working Group
 - b. Submit proposed Work Plan
 - c. Implement Work Plan
 - d. Complete execution of Work Plan
- 8^a Revise regional monitoring program
- 9 Conduct special studies
- a. Submit plan within 3 months of ~~Upon~~ 13267 letter issuance/appropriate revision of the MS4 permit
- b. Upon Executive Officer approval
- c. Within 6 months of completion of investigation plan
- d. Upon Executive Officer approval
- Submit feasibility/funding report within
(3 years after OAL BPA-approval of BPA)
- a. (one month of OAL approval of BPA)
- b. ~~Workplan due~~ (3 months after OAL approval of BPA) ~~approval~~
- c. Upon Regional Board approval
- d. Within 5 years of workplan approval
- (3 months after OAL approval of BPA ~~approval~~); Annual Reports due November 15
- As funding allows, and in order of priority identified in comprehensive Work Plan (Task 7), if applicable

PHASE II IMPLEMENTATION

- 10 Review TMDLs, including numeric targets, WLAs and LAs; delist or revise TMDLs pursuant to established Sediment Quality Objectives, new data, and results of special studies
- No later than (5 years from OAL ~~State~~ approval of BPA)

[a. The tasks and schedules identified in the Regional Board approved Work Plan developed by the Working Group shall govern implementation activities by members of the Working Group.](#)

Table NB-OCs-14. Existing NPDES Permits and WDRs Regulating Discharges in the Newport Bay Watershed

No.	Permit Title	Order No.	NPDES No.
1	Waste Discharge Requirements for the United States Department of the Navy, Former Marine Corps Air Station Tustin, Discharge to Peters Canyon Wash in the San Diego Creek/Newport Bay Watershed	R8-2006-0017	CA8000404
2	Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the Incorporated Cities of Orange County within the Santa Ana Region - Areawide Urban Storm Water Runoff - Orange County (MS4 permit)	R8-2002-0010	CAS618030
3	General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (de minimus) Threat to Water Quality	R8-2003-0061 as amended by R8-2005-0041 and R8-2006-0004	CAG998001
4	General Waste Discharge Requirements for Short-term Groundwater-Related Dischargers and De Minimus Wastewater Discharges to Surface Waters Within the San Diego Creek/Newport Bay Watershed	R8-2004-0021	CAG998002
5	General Groundwater Cleanup Permit for Discharges to Surface Waters of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Petroleum Hydrocarbons, Solvents and/or Petroleum Hydrocarbons mixed with Lead and/or Solvents	R8-2002-0007, as amended by R8-2003-0085 and R8-2005-0110	CAG918001
6	Waste Discharge Requirements for City of Tustin's 17th Street Desalter	R8-2002-0005	CA8000305
7	Waste Discharge Requirements for City of Irvine, Groundwater Dewatering Facilities, Irvine, Orange County,	R8-2005-0079	CA8000406
8	Waste Discharge Requirements for Bordiers Nursery, Inc.	R8-2003-0028	
9	Waste Discharge Requirements Hines Nurseries, Inc.	R8-2004-0060	
10	Waste Discharge Requirements for El Modeno Gardens, Inc., Orange County	R8-2005-0009	
11	Waste Discharge Requirements for Nakase Bros. Wholesale Nursery, Orange County	R8-2005-0006	

Phase I Implementation

Task 1: WDRs and NPDES Permits

The Regional Board shall review and revise, as necessary, existing NPDES permits and/or WDRs to incorporate the appropriate TMDL WLAs, compliance schedules, and monitoring program requirements. These permits are identified in Table NB-OCs-14. The appropriate TMDL WLAs, compliance schedules and monitoring program requirements shall be included in new NPDES permits/WDRs. The NPDES permits/WDRs shall specify TMDL-related provisions that apply provided that: (1) the dischargers are and remain members of the Working Group (see Task 7); and (2) the approved Work Plan developed by the Working Group is implemented in a timely and effective manner. The NPDES permit/WDRs shall also include TMDL-related provisions that apply if the discharger(s) do not participate or discontinue participation in the Working Group and/or if the approved Work Plan is not implemented effectively or in a timely manner.

Compliance with the TMDLs and wasteload allocations is to be achieved as soon as possible, but no later than December 31, 2015. For Working Group participants, NPDES permits/WDRs will specify that compliance with the wasteload allocations will not be required prior to the five year completion of execution of the Work Plan. NPDES permits/WDRs issued to Working Group members subsequent to the completion of execution of the Work Plan will require compliance with wasteload allocations as soon as possible but no later than December 31, 2015. For non-Working Group dischargers, NPDES permit/WDR provisions will require compliance with the wasteload allocations as soon as possible after adoption of NPDES permits/WDRs that implement the TMDLs, but no later than December 31, 2015. The determination of what constitutes “as soon as possible” will be at the discretion of the Regional Board’s Executive Officer.

Completion of the Work Plan and/or other investigations conducted by the Regional Board or others may result in modification of the TMDLs, wasteload allocations and the compliance schedule through the Basin Planning process. Subsequent issuance/revision of NPDES permit/WDRs will implement any such changes.

~~Provisions will be included in all new and renewed NPDES permits and WDRs to specify that, during Phase I implementation, Ultimate permit compliance with permit limitations based on wasteload allocations is expected to~~will be based upon iterative implementation of effective BMPs to manage the discharge of fine sediments containing organochlorine compounds, along with monitoring to measure BMP effectiveness.

Permit revisions shall be accomplished as soon as possible upon approval of these TMDLs Basin Plan amendment. Given Regional Board resource constraints and the need to consider other program priorities, permit revisions are likely to be tied to renewal schedules.

For commercial nurseries covered under existing WDRs, revisions of these WDRs shall address the following identified needs:

- (1) Evaluation of sites to determine/verify potential storm water and nonstorm water discharge locations;
- (2) Evaluation of current monitoring programs and methods of sampling and analysis for consistency with other monitoring efforts in the watershed;
- (3) In cooperation with U.C. Cooperative Extension, evaluation of BMPs for adequacy and implementation of the most effective BMPs to reduce/eliminate the discharge of potentially-contaminated fine sediments in both storm water and non-storm water discharges;
- (4) Monitoring to better quantify nursery runoff as a potential source of organochlorine compounds and to assure that load reductions are achieved; and
- (5) Based on the results of the preceding tasks, development of a work plan to be submitted within one month of the effective date of these TMDLs that identifies: (a) the BMPs implemented to date and their effectiveness in reducing fine sediment and organochlorine compound discharges; (b) the adequacy and consistency of monitoring efforts, and proposed improvements; (c) a plan and schedule for implementation of revised BMPs and monitoring protocols, where appropriate. It is recognized that most nursery operations are likely to be of very limited duration due to the expiration of land leases. The work plan shall identify recommendations for BMP and monitoring improvements that are effective, reasonable and practicable, taking this consideration into account. This work plan shall be implemented upon approval by the Regional Board Executive Officer.

Revisions to the Municipal Separate Storm Sewer System (MS4) permit (R8-2002-0010, NPDES No. CAS618030) and monitoring program shall address the monitoring and BMP-related tasks identified below, as appropriate. These include: ~~evaluation of discharges of organochlorine compounds from open space areas (Task 3);~~ oversight and implementation of construction BMPs (Task 4); organochlorine compound source evaluations (Task 5); assessment of dredging feasibility and identification of a funding mechanism (Task 6); and, revision of the regional monitoring program (Task 8).

NPDES permits that regulate discharges of ground water to San Diego Creek or its tributaries shall be reviewed and revised as necessary to require annual (at a minimum) monitoring, using the most sensitive analytical techniques practicable,

to analyze for organochlorine compounds in the discharges. If organochlorine compounds are found to be present, the dischargers shall be required to evaluate whether and to what extent the discharges would cause or contribute to an exceedance of wasteload allocations and to implement appropriate measures to reduce or eliminate organochlorine compounds in the discharges. New NPDES permits issued for these types of discharges shall incorporate the same requirements.

These dischargers (nurseries, MS4 permittees, ground water dischargers) may address the specific requirements identified above through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (see Task 7).

Task 2: Develop and Implement an Agricultural BMP and Monitoring Program

Apart from certain nurseries, agricultural operations in the watershed are not currently regulated pursuant to waste discharge requirements. The SWRCB's "Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program" (Nonpoint Source Policy) (2004) requires that all nonpoint source dischargers be regulated under WDRs, waivers of WDRs, Basin Plan prohibitions, or some combination of these three administrative tools. Board staff is developing recommendations for an appropriate regulatory approach to address agricultural discharges. It is expected that the Regional Board will be asked to consider these recommendations and to approve a regulatory approach in late 2007. Appropriate load allocations to implement these TMDLs will be included in WDRs or a waiver of WDRs, if and when issued by the Regional Board to address discharges from agricultural operations.

In the interim, agricultural operators shall identify and implement a monitoring program to assess OCs discharges from their facilities, and identify and implement a BMP program designed to reduce or eliminate those discharges. The proposed monitoring and BMP program shall be submitted as soon as possible but no later than (3 months from ~~State~~OAL approval of this Basin Plan Amendment (BPA)). These monitoring and BMP programs will be components of the waste discharge requirements or conditional waiver of waste discharge requirements that Board staff will recommend to implement the Nonpoint Source Policy. Load allocations identified in these TMDLs will also be specified in the WDRs/waiver, with a schedule of compliance.

It is recognized that most agricultural operations are expected to be of very limited duration due to the expiration of land leases. The monitoring and BMP programs proposed by the agricultural operators should include recommendations that are effective, reasonable and practicable, taking this consideration into account. The BMP and monitoring programs shall be implemented upon approval by the Regional Board. The BMP and monitoring

programs may be implemented individually or by a group or groups of agricultural operators. In addition, the responsible parties may address these BMP/monitoring program requirements s may be through their participation in the development and implementation coordinated with the development of an appropriate, Regional Board approved Work Plan watershed-wide workplan (see Task 7). WDRs or conditional waivers of WDRs issued to agricultural operators pursuant to the Nonpoint Source Policy shall specify that for those operators who participate in the development and implementation of a Regional Board approved Work Plan, compliance with load allocations will not be required prior to the five-year completion of execution of the Work Plan. WDRs or conditional waivers of WDRs issued subsequent to the completion of execution of the Work Plan will require compliance with load allocations as soon as possible but no later than December 31, 2015. Agricultural operators who elect not to participate in the Work Plan shall be required to achieve compliance "as soon as possible", as determined by the Executive Officer (see also Task 1).

Completion of the Work Plan and/or other investigations conducted by the Regional Board or others may result in modification of the TMDLs, load allocations and the compliance schedule through the Basin Planning process. Subsequent issuance/revision of WDRs/conditional waivers of WDRs will implement any such changes.

Task 3: Identify Parties Responsible for Open Space Areas; Develop and Implement an OCs Monitoring Program to Assess Open Space Discharges; Develop and Implement an OCs BMP Program, if Necessary

Nonpoint source discharges from open space are also subject to State regulation. During Phase I of these TMDLs, sufficient data shall be collected by the responsible parties ~~(e.g., County, private land owners)~~ to determine whether discharges of OCs from designated open space, as well as discharges resulting from erosion in and adjacent to unmodified streams, are causing or contributing to exceedances of water quality objectives and/or impairment of beneficial uses of San Diego Creek and Newport Bay. With the assistance of the stakeholders, Regional Board staff will identify the responsible parties as soon as possible but no later than (one month from State OAL approval of this BPA). Board staff will notify the identified responsible parties of their obligation to propose an organochlorine compound monitoring program within two months of notification. The monitoring program shall be implemented upon Regional Board approval.

Based on the results of tThis monitoring program, the responsible parties shall develop a BMP implementation plan within 6 months of notification by the Regional Board's Executive Officer of the need to do so. The responsible parties shall implement that plan upon Regional Board approval.

The responsible parties may address these monitoring and BMP implementation program requirements ~~may be through coordinated with~~ their participation in the development and implementation of an appropriate, Regional Board approved ~~of a watershed wide~~ Work Plan (see Task 7).

The Regional Board will consider whether WDRs or a WDR waiver is necessary and appropriate for responsible parties not currently regulated, based on the monitoring results. WDRs or a WDR waiver, if issued, will include appropriate load allocations to implement these TMDLs. For responsible parties participating in the Working Group, compliance with these load allocations will not be required prior to the five year completion of execution of the Work Plan. WDRs/WDR waivers issued to Working Group members subsequent to completion of execution of the Work Plan will require compliance with load allocations as soon as possible but no later than December 31, 2015. Responsible parties not participating in the Work Plan will be required to meet the load allocations as soon as possible, as determined by the Executive Officer.

Completion of the Work Plan and/or other investigations conducted by the Regional Board or others may result in modification of the TMDLs, load allocations and the compliance schedule through the Basin Planning process. Subsequent issuance/revision of WDRs/conditional waivers of WDRs will implement any such changes.

~~These results will also inform future review and revisions of these TMDLs.~~

Task 4: Develop and Implement Appropriate BMPs for Construction Activities

Currently, all construction activities in the watershed are regulated under the State Water Resource Control Board's (SWRCB) General Permit for Discharge of Storm Water Runoff Associated with Construction Activity (Order No. 99-08-DWQ, NPDES No. CAS000002; the "General Construction Permit"), and/or the MS4 NPDES permit. The requirements of these permits and an iterative, adaptive-management BMP approach, coupled with monitoring, are the foundation for meeting the TMDL WLAs for construction. Both the General Construction Permit and the MS4 permit are expected to be revised over time. The specific tasks identified below may be addressed by revisions to one or both of these permits. In that case, the Regional Board will integrate requirements for implementation of this Task with the requirements of the MS4/General Construction permit so as to prevent conflict and/or duplication of effort.

To assure that effective construction BMPs are identified and implemented, program improvements are needed in the following areas: (a) Storm Water Pollution Prevention Plans (SWPPPs) prepared in response to the General

Construction Permit must include supporting documentation and assumptions for selection of sediment and erosion control BMPs, and must state why the selected BMPs will meet the Construction WLAs for the organochlorine compounds; (b) SWPPP provisions must be rigorously implemented on construction sites; (c) sampling and analysis for the organochlorine pesticides and PCBs in storm and nonstorm discharges containing sediment from construction sites is necessary to determine the efficacy of BMPs, as well as compliance with the construction WLAs; sampling and analysis plans must be included in SWPPPs; (d) additional BMPs, including enhanced ~~advanced treatment~~ BMPs, must be evaluated to determine those that may be ~~most~~ appropriate for reducing or eliminating organochlorine compound discharges from construction sites (e.g., BMPs effective in control of fine particulates); (e) outreach and training are necessary to communicate these SWPPP requirements and assure their effective implementation; and (e) enforcement of the SWPPP requirements is necessary.

To address these program improvements, Regional Board staff shall develop a SWPPP Improvement Program that identifies the Regional Board's expectations with respect to the content of SWPPPs, including documentation regarding the selection and implementation of BMPs, and a sampling and analysis plan. The Improvement Program shall include specific guidance regarding the development and implementation of monitoring plans, including the constituents to be monitored, sampling frequency and analytical protocols. ~~Accordingly, the~~ SWPPP Improvement Program shall be completed by ~~(the date of State~~ OAL approval of this BPA). No later than two months from completion of the Improvement Program, Board staff shall assure that the requirements of the Program are communicated to interested parties, including dischargers with existing authorizations under the General Construction Permit, and provide training as necessary. Existing, authorized dischargers shall revise their project SWPPPs as needed to address the Program requirements as soon as possible but no later than (within three months of completion of the SWPPP Improvement Program State approval of these TMDLs). Upon completion of needed outreach and training concerning the requirements of the SWPPP Improvement Program, applicable SWPPPs that do not adequately address the Program requirements shall be considered inadequate and enforcement shall proceed accordingly. The MS4 permit shall be revised as needed to assure that the permittees communicate the Regional Board's SWPPP expectations, based on the SWPPP Improvement Program, with the Standard Conditions of Approval.

~~The MS4 permit shall be revised as needed to assure that the permittees communicate the Regional Board's SWPPP expectations, based on the SWPPP Improvement Program, with the Standard Conditions of Approval.~~ The MS4 permittees shall conduct studies to evaluate BMPs that are most appropriate for reducing or eliminating organochlorine compound discharges from construction sites (e.g., fine particulates), including advanced treatment BMPs. MS4 Permittees ~~and Co-permittees~~ shall include these BMPs in the Orange County Stormwater Program Construction Runoff Guidance Manual. Implementation of

these MS4 permittee requirements shall commence upon [issuance of appropriate Water Code Section 13267 letters or](#) approval of an appropriately revised MS4 permit, [whichever occurs first. Revisions to the MS4 permit shall implement requirements specified in applicable Section 13267 letters, if used to implement TMDL-related requirements. The Section 13267 letters/revised permit shall require the permittees to: \(a\) submit a proposed plan and schedule for studies to evaluate appropriate BMPs, as described above, within three months of issuance of the 13267 letter or permit revision; \(b\) implement the plan and schedule upon approval by the Regional Board's Executive Officer; \(c\) submit a report of the BMP investigations within 6 months of approval of the study plan. The report shall include a proposed plan and schedule for implementation of the BMPs, as appropriate, and inclusion of the BMPs in the Orange County Guidance Manual; \(d\) implement the BMP plan upon approval by the Executive Officer.](#)

[The MS4 permittees may address these SWPPP and construction site BMP-related requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan \(see Task 7\).](#)

Task 5: Evaluate Sources of OCs to San Diego Creek and Newport Bay; Identify and Implement Effective BMPs to Reduce/Eliminate Sources

Based on the regional monitoring program being implemented by the MS4 permittees and/or on the results of other monitoring and investigations, the MS4 permittees shall conduct source analyses in areas tributary to the MS4 demonstrating elevated concentrations of OCs. Based on mass emissions monitoring (described below) and source analysis, the permittees shall implement additional/enhanced BMPs as necessary to ensure that organochlorine discharges from significant land use sources to surface waters are reduced or eliminated. [As part of the investigation task, if the results indicate that additional OCs soil remediation is necessary on MCAS Tustin and MCAS El Toro, the responsible parties for such remediation will be identified. The responsible party will be tasked to implement those portions of the BMP plan identified for the responsible party for MCAS Tustin and MCAS El Toro.](#)

The permittees shall develop and implement a collection program for all banned OC pesticides and PCBs. This type of program has had demonstrated success in other geographic areas in collecting and disposing of banned pesticides. Residents and businesses in the watershed may have stored legacy pesticides that could be collected through such a program; if this is the case, this task would prevent future use and improper disposal of these banned pesticides.

Implementation of these requirements shall commence upon [issuance of appropriate Water Code Section 13267 letters or](#) approval of an appropriately

revised MS4 permit, whichever occurs first. Revisions to the MS4 permit shall implement requirements specified in applicable Section 13267 letters, if used to implement TMDL-related requirements. The 13267 letters/revised permit shall specify require the permittees to: (a) submit a proposed plan and schedule for source analyses of MS4 tributary areas with elevated OCs concentrations within 3 months of issuance of the 13267 letters or permit revision; (b) implement the proposed plan upon approval by the Regional Board's Executive Officer; (c) submit a report within 6 months of completion of the approved study plan. The report shall provide the study results and include a proposed plan and schedule for prioritized implementation of BMPs in OCs source areas; (d) implement the BMP plan upon Executive Officer approval.

The permittees may address these requirements through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan (Task 7).

Task 6: Evaluate Feasibility and Mechanisms to Fund Future Dredging Operations

Because large-scale erosion and sedimentation primarily occurs during large storm events, traditional BMPs may have limited success in reducing/eliminating the discharge of potentially-contaminated sediments to receiving waters during wet weather. In such cases, dredging within Newport Bay and/or San Diego Creek may be the most feasible and appropriate method of reducing OCs loads in these waters. However, the feasibility and effectiveness of dredging projects in removing OCs would require careful consideration, since dredging may or may not expose sediments with higher concentrations of OCs. Financing of such projects is also a significant consideration.

Entities discharging potentially contaminated sediment in the watershed shall analyze the feasibility of dredging to achieve water quality standards, and shall identify funding mechanisms for ensuring that future dredging operations can be performed, as necessary, within San Diego Creek, Upper and Lower Newport Bay. A report that presents the results of this effort shall be submitted no later than (three years from the date of ~~State~~OAL approval of this BPA). It is recognized that dredging activities are likely to be an integral part of efforts to comply with other established TMDLs, particularly the sediment TMDL. Ideally, dredging feasibility and funding investigations would be integrated with implementation and review of the sediment TMDL through the comprehensive Work Plan (Task 7). The responsible parties may address this Task requirement through their participation in the development and implementation of an appropriate, Regional Board approved Work Plan. ~~is evaluation may be coordinated with the development of a watershed-wide workplan (see Task 7).~~

Task 7: Develop a *Comprehensive* Work *Plan* to Meet TMDL Implementation Requirements, Consistent with *thean* Adaptive Management Approach

During the development of these organochlorine compounds TMDLs, regulated stakeholders in the Newport Bay watershed expressed concerns that the numeric targets used to develop the TMDLs, wasteload allocations and load allocations were flawed and that scientific review by an independent panel of experts was necessary. Further, these stakeholders suggested that pollutants other than the organochlorine compounds, such as metals, pyrethrins or other, emerging pollutants may pose the more real or significant threat to beneficial uses in the watershed. Finally, it was recommended that an integrated approach to TMDL implementation, as well as development of pending TMDLs and refinement of established TMDLs, would be a more effective and efficient approach.

Substantial efforts are already being made by many stakeholders in the watershed to address established permit and/or TMDL requirements for BMP implementation and monitoring and to conduct special investigations to understand and improve water quality conditions in the watershed. Thus, the framework exists to develop a comprehensive watershed plan for addressing water quality, not only as it relates to the organochlorine compounds, but on a larger scale that encompasses all sources of water quality impairment.

This implementation plan provides the opportunity for regulated stakeholders to form a Working Group and to participate in the development and implementation of a comprehensive Work Plan to evaluate the scientific basis of these organochlorine TMDLs, to prioritize TMDL implementation tasks, to integrate implementation with other TMDL and/or permit requirements, and to investigate unknown sources of toxicity in the watershed. As noted in the previous Task descriptions, participation by responsible parties in the Working Group and the development and implementation of a Regional Board Work Plan would address the responsible parties' obligations pursuant to the Tasks in Table NB-OCs-13. Dischargers who elect not to participate in the Working Group/Work Plan will be required to implement these Tasks, as described above.

Dischargers interested in participating in a Working Group to develop and implement a comprehensive Work Plan must commit to do so by (*within one month of ~~State~~OAL approval of the BPA*). Similar to the Nitrogen and Selenium Management Program currently being implemented in the watershed, the Working Group will develop participatory and financial requirements, which will include procedures for additional parties to become Working Group members. Submittal of a draft Work Plan is required no later than (*three months of ~~State~~OAL approval of the BPA*). The schedules for implementation of the tasks identified in the Work Plan must reflect the shortest practicable time necessary to complete the tasks. Implementation of the Work Plan will commence upon approval of the Work Plan by the Regional Board at a properly noticed public

hearing. Execution of the Work Plan must be complete within five years of Regional Board approval. Substantive changes to the tasks and schedules included in the approved Work Plan are contingent on Regional Board approval at a subsequent, properly noticed public hearing(s). However, the Regional Board's Executive Officer is authorized to revise the approved tasks and schedules if no significant comments are received during the public notice period.

At a minimum, the expected result of the execution of the Work Plan is a comprehensive, watershed plan for BMP implementation, monitoring, special investigations and other actions that will assure compliance with the OCs TMDLs, as they may be amended, as soon as possible after completion of execution of the Work Plan but no later than December 31, 2015².

The specific detailed tasks and schedules will be determined as the Work Plan is developed. Regional Board staff will work with the Working Group to identify a suitable Work Plan. Key initial tasks are expected to include the following:

1. Convene an Independent Advisory Panel (IAP) of experts with relevant expertise. To avoid questions of objectivity, the panel shall be convened by a neutral third party organization such as the National Water Research Institute. The Working Group and Regional Board staff will work together to define the desired qualifications needed for IAP participants, define the scope and authority of the IAP, and identify and describe the primary issues that will require guidance, recommendations, or specific actions from the IAP.

2: Re-evaluate OCs TMDLs Numeric Targets and Loads

With input and recommendations from the IAP, and using data being generated through ongoing scientific investigations in the watershed, the Work Plan should assess the current OCs TMDLs numeric targets, evaluate potential alternative numeric targets, and determine if the current targets should be revised, or whether targets based on site-specific data can be developed. If site-specific targets can be developed, the process or methods that will be used to develop targets should be determined, such as risk assessments or re-calculation of targets using accepted, peer-reviewed scientific methodologies.

It is recognized that there is a need for flexibility to respond to unanticipated findings and events, and to changes that may be recommended by the Independent Advisory Panel (see below). However, at a minimum, the Tasks

² This compliance date is subject to change through the Basin Planning process.

identified in Table NB-OCs-13 must be considered in Work Plan development and implementation. In addition, consideration shall be given to the following:

Develop conceptual models

Data interpretation and monitoring must be organized around a systematic conceptual view of the sources of the different organochlorine compounds and their distribution and behavior in the watershed. Development of conceptual models for these compounds would significantly enhance our understanding of their sources and impacts and would help to structure hypothesis development, monitoring design, and data interpretation. Development of the conceptual models should be based on a review of available data and information about the OCs in the watershed, and the models should be updated as new information accumulates. Characterization of sources and of habitats at risk should be based on a review of available data, framed in terms of the conceptual models and supported with the collection of new data as needed. It is expected that the IAP would provide critical review and recommendations in this process.

Develop Information Management System

Different types of data – water column, sediment, fish or bird egg tissue, infaunal surveys, hydrology, etc. – are being or will be collected throughout the Newport Bay watershed through a variety of studies, monitoring programs, or other projects. Since these data are often collected for different purposes (e.g., in response to various TMDLs and/or permits), at different times and in different areas, much of the data may be in non-comparable formats, redundant, or not spatially or temporally compatible. In order to determine what data are useful or significant, where data gaps may still occur, or where current data needs are sufficient, a comprehensive information management system should be developed that (1) establishes clear procedures for assessing data quality for data acquisition and transfer and for control of evolving versions of datasets; (2) is a relational database that can manage the variety of data types and has appropriate mechanisms for ensuring and maintaining data quality; (3) can conduct quality control checks and needed reformatting to ensure needed consistency across all data types and sources as data from other sources are obtained; (4) provides for straightforward query and data sub-setting routines to streamline access to the data; and (5) ensures that GIS capability is available for analysis, modeling, and presentation purposes. Development of a comprehensive information management system will allow for the identification of significant data gaps that need to be addressed and will provide a vehicle for establishing monitoring guidelines and preventing redundant or superfluous data collection.

~~These TMDLs are to be implemented within an adaptive management framework, with compliance monitoring, special studies, and stakeholder interaction guiding the process over time. Information obtained from compliance monitoring will measure progress toward achievement of WLAs and LAs, potentially leading to changes to TMDL allocations; ongoing investigations and recommended special studies, if implemented, may provide information that leads to revisions of the TMDLs, adjustments to the implementation schedule, and/or improved implementation strategies. Thus, implementation of the TMDLs is expected to be an ongoing and dynamic process.~~

~~Substantial efforts are now being made by many stakeholders in the watershed to address established permit and/or TMDL requirements for BMP implementation and monitoring and to conduct special investigations to understand and improve water quality conditions in the watershed. For example, Southern California Coastal Water Research Project (SCCWRP), the University of California, and the County of Orange are all involved in studies aimed at improving the understanding of causes of sediment toxicity, measuring mass emissions, developing sediment quality objectives, analyzing sources, and other relevant projects. The Irvine Company, in conjunction with other watershed stakeholders, is implementing a workplan to gain a better understanding of biologic effects of the organochlorine compounds, determining appropriate screening values, and determining the cause of sediment toxicity in the watershed. The framework exists to develop a comprehensive watershed plan for addressing water quality, not only as it relates to the organochlorine compounds, but on a larger scale that encompasses all sources of water quality impairment.~~

~~In light of this established framework, many of the preceding implementation tasks may be accomplished most effectively and efficiently through the development and implementation of a watershed-wide workplan, developed by interested stakeholders and approved by the Regional Board. The purpose of the workplan would be to (1) review implementation requirements and integrate TMDL implementation tasks with those already conducted in response to other programs (e.g., permits, TMDLs); (2) prioritize implementation tasks; (3) develop a framework for implementing the tasks, including a schedule and funding mechanism; (4) implement tasks; and (5) make recommendations regarding needed revisions to the TMDLs. Stakeholders interested in pursuing this approach are required to commit to their participation in the development and implementation of the workplan by *(one month of the State approval of these TMDLs)*. A proposed workplan is to be submitted to the SARWQCB within *(3 months of State approval of these TMDLs)*. Implementation of the workplan shall commence upon approval by the Regional Board.~~

-To the extent that there are any conflicts between the individual tasks and schedules identified above, and the prioritized plan and schedule identified in the Work Plan, the Work Plan would govern implementation activities with respect to the stakeholders responsible for Work Plan development and implementation as part of the Working Group.

Task 8: Revise Regional Monitoring Program

The County of Orange, as Principal Permittee under the County's MS4 permit, oversees the countywide monitoring program. Implementation of the monitoring program is supported by funds shared proportionally by each of the Permittees. Some monitoring requirements identified in this implementation plan are already reflected in the current program.

By (3 months from State OAL approval of BPA), the MS4 permittees shall: (1) document each of the current monitoring program elements that addresses the monitoring requirements identified in the preceding tasks; and, (2) revise the monitoring program as necessary to assure compliance with these monitoring requirements.

Review of/revisions to the monitoring program shall address:

- (1) Estimation of mass emissions of chlordane, DDT, PCBs and toxaphene.
- (2) Determination of compliance with MS4 wasteload allocations for Upper and Lower Newport Bay, and of status of achievement with the informational wasteload allocations for San Diego Creek for chlordane and PCBs.
- (3) Assessment of temporal and spatial trends in organochlorine compound concentrations in water, sediment and tissue samples.
- (4) Semi-annual sediment monitoring in San Diego Creek and Newport Bay. Measurements of sediment chemistry in these waters should be evaluated with respect to evidence of biological effects, such as toxicity and benthic community degradation.
- (5) Evaluation of organochlorine bioaccumulation and food web biomagnification
- (6) Assessment of the degree to which natural attenuation is occurring in the watershed.

Accurately quantifying the very small mass loads that are allowable under these TMDLs will be very challenging; analytical strategies for quantifying loads of the organochlorine compounds must be carefully explored.

Revisions to the monitoring program shall take into consideration the following recommendations provided by members of the Organochlorine Compounds TMDL Technical Advisory Committee (TAC):

- (1) The analytical parameters measured need to be established for each matrix of interest (e.g., sediment, tissue, ambient water). The representative list of compounds to be measured needs to be identified (e.g., what chlordane compounds will be measured and summed to represent “total chlordane;” will PCB congeners be measured and summed or will Aroclors?).
- (2) Data quality will need to be consistent with the State’s Surface Water Ambient Monitoring Program (SWAMP). Detection limits, accuracy and precision of analytical methods should be adequate to assure the goals of the monitoring efforts can be achieved.
- (3) Bioaccumulation/biomagnification in high trophic level predators may not immediately respond to load reductions; appropriate time scales and schedules for monitoring that are supported by empirical data and/or modeling should be established.
- (4) Sentinel fish and wildlife species should be selected for monitoring based on home range, life history, size and age.

[MS4 permittees may address the requirements specified herein by participation in the Working Group and development and implementation of an appropriate, Regional Board approved Work Plan \(see Task 7\).](#)

Task 9: Conduct Special Studies

The following special studies should be conducted, in addition to the studies already underway in the watershed. This list is based, in part, on recommendations of the technical advisory committee for the organochlorine compounds TMDLs. These studies will be implemented as resources become available, and the results will be used to review and revise these TMDLs. Stakeholder contributions to these investigations are encouraged and would facilitate review of the TMDLs.

- (1) Evaluation of sediment toxicity in San Diego Creek and tributaries, and Upper and Lower Newport Bay.

Previous studies have included Toxicity Identification Evaluations (TIEs) that have yielded inconclusive results as to the cause of toxicity in Newport Bay. Sediment toxicity within San Diego Creek is not well-documented or well-understood. There is evidence that pyrethroid compounds may be a significant contributor. In determining the extent to which nonpolar organic compounds are causing or contributing to sediment toxicity, the differential contribution of both the organochlorine compounds and pyrethroids should be determined to assure that control actions are properly identified and implemented. Monitoring should be performed year-round at multiple locations within San Diego Creek and Newport Bay (to encompass spatial and temporal variability), and should include

various land use types in order to quantify the relative contributions from various sources.

(2) Refinement of sediment and tissue targets.

A study is being conducted by the San Francisco Estuary Institute to develop indicators and a framework for assessing the indirect effects of sediment contaminants. The objective is to provide methodology that will assist in evaluating indirect adverse biological effects for bioaccumulative pollutants (e.g. due to food web biomagnification), as part of the overall goal of developing statewide sediment quality objectives. Newport Bay is being used as a case study to show how the proposed methodology could be implemented on a screening level. Multiple lines of evidence will be evaluated to determine impacts of organochlorine pesticides and PCBs to humans and wildlife. A conceptual foodweb model will be developed, and sensitive wildlife receptors will be identified. Empirical field data and a steady-state food web model will be used to calculate bioaccumulation factors for the organochlorine compounds. The bioaccumulation factors will be combined with effects thresholds to identify sediment concentrations that are protective of target wildlife and humans.

Once completed by SFEI, a thorough evaluation of the Newport Bay case study needs to be initiated, and any additional analyses required for a more in-depth risk analysis should be identified and completed. Protective sediment and tissue targets for indirect effects to humans and wildlife should be developed by the time the TMDLs are re-opened. Furthermore, once TIEs have identified the likely toxicant(s) responsible for sediment toxicity in San Diego Creek and Newport Bay (direct effects), field and laboratory studies should be conducted in order to determine bioavailability and the dose-response relationship between sediment concentrations and biologic effects.

(3) Evaluation of regional BMPs (e.g., constructed wetlands and sediment detention basins) for mitigating potential adverse water quality impacts of sediment-associated pollutants (e.g., OCs, pyrethroids).

Large-scale, centralized BMPs such as constructed wetlands and storm water retention basins may be more effective than project-level BMPs in reducing adverse environmental impacts of sediment-borne pollutants. Regional BMPs are either being planned or are in place within the watershed (e.g., IRWD NTS). Their potential effectiveness for capturing the organochlorine compounds and mitigating impacts needs to be evaluated.

(4) Improvement in linkage between toxaphene measured in fish tissue and toxaphene in bed sediments.

The toxaphene impairment listing for San Diego Creek is based on fish tissue exceedances that have no measured linkage with toxaphene in sediments.

While sediment is the primary TMDL target for these TMDLs, toxaphene is usually not detected in sediment. Because of its chemical complexity, there is a large degree of analytical uncertainty with measurements of toxaphene in environmental samples that use standard methods (e.g., EPA Method 8081a), especially at low levels. Confirmations of toxaphene in fish and sediment samples in San Diego Creek (and possibly Newport Bay) using other techniques (e.g., GC-ECNI-MS or MS/MS) is recommended.

- (5) Evaluation of relative importance of continuing OCs discharges to receiving waters through erosion and sedimentation processes, versus recirculation of existing contaminated bed sediments, in causing beneficial use impairment in San Diego Creek and Newport Bay.

This study should allow for determination of the most effective implementation strategies to reduce organochlorine compounds in the MS4 and other receiving waters.

Phase II Implementation

Task 10: TMDL Reopener

These TMDLs will be reopened no later than (*five (5) years following ~~State~~OAL approval of this BPA*) in order to evaluate the effectiveness of Phase I implementation. At that time, all new data will be evaluated and used to reassess impairment, BMP effectiveness, and whether modifications to the TMDLs are warranted. If BMPs implemented during Phase I ~~BMPs~~ have been shown to be ineffective in reducing levels of organochlorine compounds, then more stringent BMPs may be necessary during Phase II implementation.

Implementation of these TMDLs and the schedule for implementation are very closely tied with other TMDLs that are currently being implemented in the watershed. The sediment TMDL allowable load for San Diego Creek was the basis for calculating organochlorine compound loading capacities. The sediment TMDL is scheduled for revision in 2007; changes to the sediment TMDLs will likely necessitate changes to these organochlorine compounds TMDLs as well.

Attachment C

Scientific Peer Reviewer and USEPA Comment Letters

From: "Daniel W. Anderson" <dwanderson@ucdavis.edu>
To: "Wanda Cross" <wcross@waterboards.ca.gov>, "Kathy Rose" <krose@waterboards.ca.gov>
Date: 1/3/2007 3:16:27 PM
Subject: Re: Fwd: Peer Review of Draft Organochlorine Compounds TMDLs for San Diego Creek and Newport Bay

K. Rose and W. Cross,

As I said I would, I did spend some time (about 8 hours) reading through your document, Total Maximum Daily Loads for Organochlorine Compounds, dated 17 November 2006. First off, and given the diverse and distinguished representation in the original preparation and analyses in this report, along with a diverse and competent group of advisors who met at least three times to discuss various sections of this report in 2006, such a document is highly-likely to be current, scientifically sound, and representative of the most recent risk-assessment approaches to judge, for example, "how much this system can or should be allowed to 'take' from compounds X." And that was my general impression of the report after reading through the document, as I expected. The approach combines physical/chemical characteristics with biological characteristics (ex. BCFs) of the various compounds, and then attempts to tie them together with currently-accepted, recently-developed models (in this case as most recently developed by EPA, the TMDL).

As an ecotoxicologist, I have always been a bit skeptical (from an ecological viewpoint) of the desire by regulatory agencies to assign (realistic) numbers to various physical plus biological phenomena for regulatory purposes, based heavily on sediment or water quality criteria, and general synthetic models. It might, however, be a personal "bias" based on my past experiences with a regulatory agency that emphasized direct and extensive laboratory and field studies with wildlife species (USFWS). But the TMDL approach at least attempts, in my view, to combine, as reasonably as possible, and with a built-in margin of safety (although this potentially introduces an unknown degree of uncertainty), a derivation of some sort of number that regulators and enforcers can work-with. And as ecotoxicologists often state, the unique position of ecotoxicology and its intent is that the "field" be relevant and contributory in our science of risk assessment and then regulation and control of toxic substances, and therefore of high relevance to policy and regulation. It is something we all chide and thus, as any businessman would say: "we had better be able to deliver the goods."

And after-all, we are talking here about pollutants, which do usually act quite as natural organic materials in the way they cycle through ecosystems and individuals, so they can be predicted by and predicated on basic

scientific descriptions. But these compounds have been introduced by man's activities and therefore must be controlled and regulated. No, I think the models here, as far as they can go, are scientifically sound and representative of a state-of-the-art approach. And given the fairly large (actually huge) body of toxicological and physiological and physical data on which to develop these models for San Diego Creek and Newport Bay, a reasonable, scientifically-based regulatory value should be possible, given the fact that it can and will be updated with new insights from the rather large research and remediation programs associated with future and current applications and research in this specific watershed. And given that this is a fairly well-studied watershed (in comparison to many others in California, but not as well-studied perhaps, for example, as San Francisco Bay), I would still expect reasonable and useful TMDL values, especially given the many outstanding follow-up studies that are listed in the report. I wonder if some kind of comparative data (a paragraph or two) on TMDLs from other systems in California would be useful. On reading through the report and thinking about other systems in California, I was curious about this.

One of the most serious criticisms of the "regulatory value" approach is the many intermediate steps between say, sediment or water and then biota, and then between biota, that remain unknown, so that the values are inherently questionable and possibly incomplete. Thus some uncertainty is inevitable. But regulation is still necessary and the approach of "best available data" is thoroughly justified. But, a good monitoring program is necessary (1) to follow trends and changes as regulation and remediation (or continuing downward trends occur (based on your regulatory values as well as the best analytical chemistry), and (2) to further understand the mechanisms and patterns (and further filling-in those boxes in the model of those unknown intermediate steps between sediment and biota), and regarding this specific watershed (my guess is that every watershed is different in some unique way and general models need to be "tweaked" to specific systems and their specific characteristics), to refine understanding through scientific hypothesis-testing and modeling.

That said, I think you are doing that here. It adds a lot of strength to the regulatory process (I am not a lawyer, but something mentioned in your report, a court-case challenge to express scientifically-derived TMDLs on a daily rather than longer-term basis struck me oddly--without more knowledge on this specific example--that well-intentioned and scientific regulatory standards like you have developed here will always be subject to seemingly and often frivolous challenges). Certainly the better the science, the less likely the regulatory values will be challenged.

Given that these TMDLs reviewed here are for "legacy" organochlorines, it is important that the sources be identified as best as possible, but this

is difficult, not because of lack of scientific data but because of "legacy regulatory omissions" from the past. I hope that research associated with these TMDLs will be able to "zero-in" a bit better, now that we have more modern regulatory bases and better science to assign regulatory values to ecological phenomena. I assume that the regulatory program has in-it this better data-base on which to operate for currently-used and more easily source-identifiable compounds which are no-doubt being introduced into the current system. This is mentioned in your report and I assume the TMDLs for things like Se, etc. will be (are being) developed. I would expect TMDLs for these to be even more supportable through more complete data.

It wasn't immediately apparent to me as a reader of the report (but I didn't study it real carefully), but I assume that some of the current studies will be doing PCB-isomer specific, dioxin, co-planar PCBs, etc. analyses in a representative high trophic-level indicator species in the system (preferably in the lower reaches of the system, where maximum bioaccumulation would be expected to occur). The same idea would apply to sophisticated analytical studies that attempt to identify new compounds expected in the system, such as jet fuel components (from the military bases in the watershed) and PDBE-like compounds which are increasingly being shown important in other systems, and expected from this watershed. Some of the more sensitive and sophisticated chemical analyses and determinations should be possible from tissue analyses through the (probably already completed) SCCWRP studies which should be reporting to you at the end of this coming March. I don't know which bird species SCCWRP is studying, but (perhaps too late here but still possible for a future study) a common species in the system rather than, say, endangered or listed species should be used as a continually monitored indicator or sentinel species. In these cases, dynamics, etc. of various compounds are essentially the same in species less likely to be affected and therefore more amenable to detailed study, with more data and samples possible, than the species experiencing potential problems, listed, etc. In that regard, I found the limited data on clapper rails to be minimally (or not even) useful for determinations related to the TMDLs in this report. Use of more common bird species, for example, a bit "lower on the food-web" would seem to be instructive. Pharmacodynamics and effects in these species still operate pretty much on a dose/response basis and are highly predictable (for example, the "gull models" developed by the CWS). Isotope studies can also better place your upper-trophic species (fish or fowl) into a more quantifiable trophic position. Basing regulatory values on only listed-species, again moves you from an ecological, scientific basis to a more policy basis. Don't just consider the listed species in the system. They will yield you the lesser amount of useful regulatory data. Of course, don't ignore them completely either.

I did have a few specific questions that might deserve some further

explanation:

1. Could you include a short discussion on why the EPA TMDLs of 2002 were basically redone by the Santa Ana WQCB? What were the differences, briefly, in approach and methodology? Is this a routine or sensitive subject? Just knowing the current situation, I would guess that the state's approach is more conservative and perhaps more complete and scientific. I just wondered about this as I read through the report.
2. On Table 2-2, I wondered why PCBs and PCB-like compounds were not interpreted through the TEQ approach. Would at least this not warrant some further study with very sophisticated analytical chemistry (say, in a representative series of samples or some representative pools?). I know it is expensive. I see that in Table 2-5, the TEQs for birds and mammals are mentioned. Realizing that the clapper rail samples were the only wildlife values represented, there would be no other data to evaluate for TEQs unless a high trophic, resident fish (page 20) could be evaluated on this basis. What am I missing here? I just have to accept the other values in the same table.
3. On page 24, when "adverse effects were caused by DDT or its metabolites", does this mean the different forms are analyzed and interpreted separately. With DDE, some agencies (I think EPA and some state agencies I have talked-to) have developed eggshell thinning indices as an easily-measurable endpoint for DDE effects, because shell thinning has been so well and extensively studied. This would be quite easy to do with some kind of indicator species (page 26), such as one of the ardeids in the Newport Bay (upper?) system. I just do not know which species nest there, but would guess there is a colony of DCCO or ardeids (such as BCNH or GBHE, that could be sampled, perhaps a tern other than LETE) that could be studied (and sampled).
4. The current field data demonstrate very convincingly that OC residues have and are declining in the system and that levels have become very low, and expectations are that TMDLs will continue to show this (perhaps accelerated by remediation). I wouldn't expect direct toxic effects any more (even eggshell thinning) but perhaps some endocrine disruptions and perhaps biomarker effects that would be physiologically demonstrable but perhaps might not be ecologically relevant, i.e., such minor effects might logically be compensated-for in the biota. Don't know if this is worthy of discussion, however, as it just brings up more unknowns.
5. Regarding the use of sediment residues, sampling them is good because of the known relationships between sediment samples and organisms that seem in most cases better than water samples, but I also wonder if the sediments aren't "sequestering" some of the contaminants in some instances. It would

seem that this is an interesting question to pursue and it might relate to declining residues in the biota so adequately demonstrated in this report. I think that "story" is worth a publication, by the way.

6. In the bay, exceedences seem clear enough, as speculated, through bioaccumulation, but it is not clear if they are local in some cases. San Diego Creek and the drainages of the Tustin Plain seem clearly impeded, and the most conservative ("safest") approach seems to develop TMDLs for anything that exceeds or might be expected to exceed safe levels. The development of informational TMDLs is also a good idea. The more information, the better.

7. I wonder about looking at PDBEs. Perhaps it is already being done.

8. I would say the most important work regarding sensitive wildlife work (birds, amphibians?, reptiles?) is not done. Will the SCCWRP study help out on this question?

9. A minor typo? Page 44, first sentence after "DDT." If you have information that DDT use began in the 1930s, I would be astonished; as it's insecticidal properties were only discovered in 1939 and it was a military secret throughout World War II. I'll bet you mean the 1940s (after the war was over).

10. On page 46, end of second paragraph, several statements seem a bit unclear. First "brown pelican seems to be the most susceptible to adverse biological effects." I don't think this is true. For example, DCCO may be more susceptible or at least equally susceptible. The brown pelican is the most-studied, and therefore the most well-known to have been affected by these legacy pollutants. BRPE is now being reviewed by CA and USFWS for de-listing because of its recovery from DDE. Brown pelicans barely use the study area (the coastal parts) and do not breed there (but fairly close). And the statement of a threshold of 3 ppm ww for eggshell thinning in the BRPE, I am sure comes from studies in the east by Blus and colleagues. The reference given is EPA 2000, but there are two (unlikely) references given, 2000a and 2000b. Given this is not even a major part of the TMDL evaluation, one wonders why it is even (a bit carelessly) mentioned. I do know this literature very well, and it gives me a little "pause" regarding citations I am much less familiar-with. Just a word of caution here not to appear careless! I am on your side.

11. However and overall, this is an impressive document, I think well supported by the science of ecotoxicology, the data, and the data analysis; and then, to even be further documented with the impressive follow-up studies now underway and soon to be in your hands. I have no serious problems with the report, and it promises to get even better with more

science coming-in.

Let me know if you have any questions.

Daniel W. Anderson, Professor
Department of Wildlife, Fish, and Conservation Biology
University of California
Davis, CA 95616



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

2007 JAN 22 AM 8:41

JAN 11 2007

Carole Beswick
Chairperson
Santa Ana Regional Water Quality Control Board
3737 Main St., Suite 500
Riverside, CA 92501-3348

Dear Ms. Beswick,

EPA appreciates the opportunity to review and comment on the proposed San Diego Creek/Newport Bay Organochlorine TMDLs. We support the adoption of these TMDLs and the proposed Basin Plan amendment. Below we offer some comments for your consideration.

The proposed TMDLs meet all regulatory requirements and will be approvable upon submittal to EPA. We find these TMDLs provide reasonable technical analysis using the available data, information and scientific tools. The selected numeric targets are appropriate and have been widely used in California to address impacts from bioaccumulative toxic pollutants. Regional Board staff has modified the technical approach to integrate toxic pollutant loads with the existing sediment TMDL loads, which results in small pollutant loading capacities for each waterbody.

These TMDLs address the specific water body-pollutant combinations as identified on California's 2004-2006 303(d) list for San Diego Creek/Newport Bay watershed, as approved by EPA on November 30, 2006. Regional Board staff have also proposed to delist certain toxic pollutants from these waters. EPA generally concurs with the assessment findings and supporting information to delist certain toxic pollutants, although we have yet to make a final determination on these findings. We anticipate taking further action on the State's decisions for not including waters and/or pollutants on the 303(d) list next month.

Once these TMDLs are finalized and adopted by State procedures and subsequently receive EPA approval, the TMDLs will supersede the EPA-established TMDLs for corresponding water body-pollutant combinations. Any EPA-established TMDL will remain in effect unless it is included in the proposed Organochlorine TMDLs or the appropriate delisting is approved. Thus, EPA-established TMDLs for chlordane, dieldrin and PCBs in San Diego Creek will remain in effect and need to be incorporated into NPDES permits.

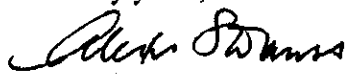
We endorse the proposed TMDL implementation plan, which identifies reasonable pollutant reduction measures and takes an adaptive management approach to reviewing and, if necessary, revising the TMDLs, allocations, and/or implementation actions based on future data and information. State-adopted TMDLs have more regulatory effect upon remediation projects at EPA Superfund sites such as El Toro Marine Base, as the State-adopted TMDLs may provide

mandatory clean-up levels, and EPA-established TMDLs do not have the same requirements. This could influence the implementation goals.

We urge the Regional Board to adopt these TMDLs, consistent with the State's commitment to submit final TMDLs for these waters for EPA approval by 2007. Over the past two years, the Santa Ana Regional Board has struggled to maintain pace with its TMDL commitments; the development of final Organochlorine TMDLs has been repeatedly delayed.

We appreciate your staff's hard work on these TMDLs and look forward to Regional Board adoption scheduled for your March meeting. If you have any questions concerning these comments, please call me at (415) 972-3572 or Peter Kozelka at (415) 972-3448.

Sincerely yours,

 11 January 2007

Alexis Strauss
Director, Water Division

cc: Gerard Thibeault, Executive Officer

Attachment D

Corrected Tables 4-7, 6-1a, 6-1b, 6-2a, 6-2b November 17, 2006 Technical Organochlorine Compound TMDLs Report San Diego Creek, Upper Newport Bay, Lower Newport Bay

Note: Corrected values appear under or after the November 17, 2006 report values, which are shown in strike-out type.

Table 4-7. Flow Characteristics and Existing Loads to San Diego Creek

Pollutant	Fish Tissue Concentration ($\mu\text{g/kg wet}$)	BCF (L/kg)	Dissolved Concentration ($\mu\text{g/L}$)	Flow Rate (Q) (cfs)	Flow Duration (Q_d) (days/year)	Suspended Sediment Concentration C_s (mg/L)	Dissolved Fraction (F_d)	K_d (m^3/g)	Existing Load (g/year)
Total DDT	161.5	363,000	0.0004	15	352	88	0.2554	.04677	22.5
				365	10	1569	0.1960		29.3
				1,595	3	4543	0.0188 0.0134		211.3
							0.0066		295.3
							0.0047		792.6
									1111.6
Total Load-DDT									1026.5 1436.2
Chlordane**	9.7	37,800	0.0003	15	352	88	0.3894	.01622	8.5
				365	10	1569	0.4128		8.0
							0.0344		66.4
				1,595	3	4543	0.0378		60.4
							0.0122		246.3
							0.0134		223.7
Total Load-Chlordane									321.2 292.2
Toxaphene	10.0	52,000	0.0002	15	352	88	0.8046	.00251	3.1
							0.8195		3.0

Attachment D

			365	10	1569	0.1872	9.2
			1,595	3	4543	0.2024	8.5
						0.0736	30.6
						0.0806	27.9
Total Load-Toxaphene							39.4
Total PCBs**	33.7	270,000	0.0001	15	352	0.4227	3.8
				365	10	0.4467	3.6
				1,595	3	0.0393	28.4
						0.0432	25.8
						0.0139	104.9
Total Load-PCBs						0.0153	95.3
							437.4
							124.8

*Values for existing loads differ from the values calculated by USEPA (2002). Differences are due to the following: In converting from sediment yield to sediment concentration, USEPA used a metric ton conversion. Board staff calculated sediment concentration using a short ton conversion, since use of short tons is the local practice. Additionally, the log K_{oc} for total DDT was recalculated using a weighted average as opposed to the arithmetic average used by USEPA. This is because DDE > DDD and DDT. Data used to determine the relative proportion of DDT and metabolites were obtained from the SCCWRP sediment toxicity study (2003). Fish tissue concentrations reported in the table are the geometric mean of red shiner and fathead minnow TSMP fish tissue concentration data obtained from San Diego Creek and tributaries during 2002 (n=3).

**Note that TMDLs for chlordane and PCBs in San Diego Creek are for informational purposes only.

Attachment D

Table 6-1a. Existing Loads, Loading Capacities, TMDLs and Needed Reductions for San Diego Creek, Upper and Lower Newport Bay (expressed on a "daily" basis to be consistent with the recent D.C. Circuit Court of Appeals decision in *Friends of the Earth, Inc. v. EPA, et al.*, No. 05-5015 [D.C. Cir.2006]).

Water Body	Pollutant	Existing Load	Loading Capacity	TMDL	Needed Reduction
		average grams per day			
San Diego Creek and Tributaries	Total DDT	2.8 3.9	1.08	1.08	1.73 2.85
	Chlordane*	0.88 0.80	0.70	0.70	0.18 0.10
	Toxaphene	0.12 0.11	0.02	0.02	0.10 0.09
	Total PCBs*	0.38 0.34	5.30	0.38 0.34	Not Required
Upper Newport Bay	Total DDT	6.35	0.44	0.44	5.92
	Chlordane	1.25	0.25	0.25	0.99
	Total PCBs	0.25	2.42	0.25	Not Required
Lower Newport Bay	Total DDT	1.80	0.16	0.16	1.64
	Chlordane	0.10	0.09	0.09	0.01
	Total PCBs	0.66	0.89	0.66	Not Required

Table 6-1b. Existing Loads, Loading Capacities, TMDLs and Needed Reductions for San Diego Creek, Upper and Lower Newport Bay (expressed on an "annual" basis for implementation purposes).

Water Body	Pollutant	Existing Load	Loading Capacity	TMDL	Needed Reduction
		grams per year			
San Diego Creek and Tributaries	Total DDT	1027 1436	396	396	631 1040
	Chlordane*	324 292	255	255	66 37
	Toxaphene	42.8 39	6	6	37 33
	Total PCBs*	137 125	1933	137 125	Not required
Upper Newport Bay	Total DDT	2319	160	160	2159
	Chlordane	455	93	93	362
	Total PCBs	92	884	92	Not required
Lower Newport Bay	Total DDT	656	59	59	597
	Chlordane	36	34	34	2
	Total PCBs	241	326	241	Not required

*Note that TMDLs for chlordane and PCBs in San Diego Creek are being developed for informational purposes only.

Attachment D

Table 6-2a. Proposed TMDLs and Allocations for San Diego Creek, Upper and Lower Newport Bay (expressed on a "daily" basis to be consistent with the recent D.C. Circuit Court of Appeals decision in *Friends of the Earth, Inc. v. EPA, et al.*, No. 05-5015 [D.C. Cir.2006]).

		Total DDT	Chlordane	Total PCBs	Toxaphene
Type		(average grams/day)			
San Diego Creek**					
WLA	Urban Runoff – County MS4 (36%)	0.35	0.23	0.12 0.11	0.005
	Construction (28%)	0.27	0.18	0.09	0.004
	Commercial Nurseries (4%)	0.04	0.03	0.01	0.001
	Caltrans MS4 (11%)	0.11	0.07	0.04 0.03	0.002
	Subtotal – WLA (79%)	0.77	0.50	0.27 0.24	0.01
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.05	0.03	0.02	0.001
	Open Space (9%)	0.09	0.06	0.03	0.001
	Streams&Channels (2%)	0.02	0.01	0.01	0.0003
	Undefined (5%)	0.05	0.03	0.02	0.001
	Subtotal – LA (21%)	0.21	0.13	0.07 0.08	0.003
MOS (10% of total TMDL)		0.11	0.07	0.04 0.03	0.002
Total TMDL		1.08	0.70	0.038 0.34	0.02
Upper Newport Bay					
WLA	Urban Runoff - County MS4 (36%)	0.12	0.08	0.08	
	Construction (28%)	0.11	0.06	0.06	
	Commercial nurseries (4%)	0.02	0.01	0.01	
	Caltrans MS4 (11%)	0.03	0.03	0.02	
	Subtotal – WLA (79%)	0.31	0.18	0.18	
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.02	0.01	0.01	
	Open Space (9%)	0.04	0.02	0.02	
	Channels & Streams (2%)	0.01	0.005	0.005	
	Undefined (5%)	0.02	0.01	0.01	
	Subtotal – LA (21%)	0.08	0.05	0.05	
MOS (10% of Total TMDL)		0.04	0.03	0.03	
Total TMDL		0.44	0.25	0.25	
Lower Newport Bay					
WLA	Urban Runoff – County MS4 (36%)	0.05	0.03	0.21	
	Construction (28%)	0.04	0.02	0.17	
	Commercial Nurseries (4%)	0.01	0.003	0.02	
	Caltrans MS4 (11%)	0.02	0.01	0.07	
	Subtotal – WLA (79%)	0.11	0.07	0.47	
LA	Agriculture (5%) (excludes nurseries under WDRs)	0.01	0.004	0.03	
	Open Space (9%)	0.01	0.01	0.05	
	Channels & Streams (2%)	0.003	0.002	0.01	
	Undefined (5%)	0.01	0.004	0.03	
	Subtotal – LA (21%)	0.03	0.02	0.12	
MOS (10% of Total TMDL)		0.02	0.01	0.07	
Total TMDL		0.16	0.09	0.66	

*Percent WLA (79%) and LA (21%) is applied to the TMDL, after subtracting the 10% MOS from the Total TMDL. Percent WLA and Percent LA add to 100%.

**Note that TMDLs are being developed for chlordane and PCBs in San Diego Creek for informational purposes only.

Attachment D

Table 6-2b. Proposed TMDLs and Allocations (Annual) for San Diego Creek, Upper and Lower Newport Bay (expressed on an "annual" basis for implementation purposes).

		Total DDT	Chlordane	Total PCBs	Toxaphene
Category	Type	(grams per year)			
San Diego Creek**					
WLA	Urban Runoff – County MS4 (36%)	128.3	82.6	44.4 40.5	1.9
	Construction (28%)	99.8	64.3	34.5 31.5	1.5
	Commercial Nurseries (4%)	14.3	9.2	4.9 4.5	0.2
	Caltrans MS4 (11%)	39.2	25.2	13.6 12.4	0.6
	Subtotal – WLA (79%)	281.6	181.3	97.5 88.9	4.3
LA	Agriculture (5%) (excludes nurseries under WDRs)	17.8	11.5	6.2 5.6	0.3
	Open Space (9%)	32.1	20.7	11.1 10.1	0.5
	Streams & Channels (2%)	7.1	4.6	2.5 2.3	0.1
	Undefined (5%)	17.8	11.5	6.2 5.6	0.3
	Subtotal – LA (21%)	74.8	48.2	25.9 23.6	1.1
MOS (10% of Total TMDL)		40	26	14 13	0.6
Total TMDL		396	255	137 125	6
Upper Newport Bay					
WLA	Urban Runoff – County MS4 (36%)	51.8	30.1	29.8	
	Construction (28%)	40.3	23.4	23.2	
	Commercial Nurseries (4%)	5.8	3.3	3.3	
	Caltrans MS4 (11%)	15.8	9.2	9.1	
	Subtotal – WLA (79%)	113.8	66.1	65.4	
LA	Agriculture (5%) (excludes nurseries under WDRs)	2	8	7	
	Open Space (9%)	9.0	7.6	7.5	
	Streams & Channels (2%)	2.9	1.7	1.7	
	Undefined (5%)	7.2	4.2	4.2	
	Subtotal – LA (21%)	30.2	21.4	20.3	
MOS (10% of Total TMDL)		16	9	9	
Total TMDL		160	93	92	
Lower Newport Bay					
WLA	Urban Runoff – County MS4 (36%)	19.1	11.0	78.1	
	Construction (28%)	14.9	8.6	60.7	
	Commercial Nurseries (4%)	2.1	1.2	8.7	
	Caltrans MS4 (11%)	5.8	3.4	23.9	
	Subtotal – WLA (79%)	41.9	24.2	171.4	
LA	Agriculture (5%) (excludes nurseries under WDRs)	2.7	1.5	10.8	
	Open Space (9%)	4.8	2.8	19.5	
	Streams & Channels (2%)	1.1	0.6	4.3	
	Undefined (5%)	2.7	1.5	10.8	
	Subtotal – LA (21%)	11.2	6.4	45.5	
MOS (10% of Total TMDL)		5.9	3.4	24	
Total TMDL		59	34	241	

*Percent WLA (79%) is applied to the TMDL, after subtracting the 10% MOS. Percent WLA and Percent LA add to 100%.

**Note that TMDLs are being developed for chlordane and PCBs in San Diego Creek for informational purposes

ATTACHMENT E
MATRIX OF DIFFERENCES IN PROPOSED TARGETS
FOR THE DRAFT ORGANOCHLORINE COMPOUNDS TMDLS

Final Version - April 4, 2007

This matrix has been prepared per the direction of the Santa Ana Regional Water Quality Control Board during their December 1, 2006 Board meeting. Extensive verbal and written comments were received that there are flaws in the science underlying the targets that are the basis for the draft Organochlorine Total Maximum Daily Loads (TMDLs) for the Newport Bay watershed. The selection of targets will impact the determination of whether or not a TMDL is required and the implementation measures that are therefore necessary.

The goals of this matrix are to (1) outline the targets proposed in the TMDL and the targets proposed in the comments, (2) provide the derivation of each of the proposed targets, and (3) to summarize the major scientific issues regarding the targets. The matrix is a summary intended for purposes of discussion and therefore does not contain complete technical descriptions or analyses and does not include the recommendations of all commentators, including the US Fish and Wildlife Service.

The matrix is organized into two tables as follows:

- Table 1: Sediment Targets
- Table 2: Fish Tissue Targets

The suggested next step is to convene an independent advisory panel (IAP) with facilitation as the first step in TMDL implementation and to charge the IAP with (1) evaluating all proposed targets; (2) making recommendations for appropriate targets; and, (3) evaluating ongoing studies and recommending refinement/additional investigations necessary to support targets specific to the waterbodies addressed by the proposed TMDLs. Based on the recommendations from the IAP, the TMDL should be re-evaluated, if necessary, to incorporate the changes.

ACRONYMS USED IN THE MATRIX

CTR: California Toxics Rule	OEHHA: Office of Environmental Health Hazard Assessment (State of California)	ppb: Parts Per Billion (or ug/kg)
EPA: Environmental Protection Agency	NAS: National Academy of Sciences	SWRCB: State Water Resources Control Board
EqP: Equilibrium Partitioning	NOAA: National Oceanic and Atmospheric Administration	TEL: Threshold Effects Level
ERM: Effects Range Median	USFWS: United States Fish and Wildlife Service	K_{oc}: organic carbon/water partition coefficient
FDA: US Food and Drug Administration	NY: State of New York	K_{ow}: octanol-water partition coefficient

TABLE 1. SEDIMENT TARGETS

OC Compound	Draft TMDL Proposed Target	Commentators Proposed Target	Derivation of Draft TMDL Proposed Target	Derivation of Commentators Proposed Target	Issues
DDT in freshwater sediment	6.98 ppb	65 ppb <i>protection of wildlife</i>	Threshold Effect Levels (TEL) as identified in Buchman (1999)	Equilibrium Partitioning (EqP)	<p><u>For</u> Draft TMDL Proposed Target:</p> <ul style="list-style-type: none"> - Targets (derived from TELs) are not regulatory standards, but commonly used to evaluate contaminated sites, characterize sites for disposal of dredged material, and establish goals for cleanup (Staff Report, pg. 34). TELs are peer-reviewed and reliance on TELs for setting targets is consistent with SWRCB policy. The State of Florida, Canada and other experts have used TELs as sediment quality guidelines. <p><u>Against</u></p> <ul style="list-style-type: none"> - TELs were not developed as, intended as, or adopted as regulatory standards. TELs do not adequately consider dose-response or toxicity thresholds and, therefore, their use as proxies for loading capacity is questionable. - Underlying data used to develop TELs may be flawed. For example, more than 70 errors were found in the dataset used to calculate the DDT TEL, and four major errors were found in the data set used to derive the chlordane ERM (the precursor used to develop the chlordane TEL), making the guidelines unreliable.
DDT in saltwater sediment	3.89 ppb	65 ppb <i>protection of wildlife</i>	(NOAA Screening Quick Reference Tables)	Derived from CTR (method approved by SWRCB and EPA)	<p><u>Commentators Proposed Target:</u></p> <p><u>For</u></p> <ul style="list-style-type: none"> - Based on adopted numeric objective (approved by SWRCB and EPA through the CTR) and considers dose-response and toxicity thresholds for the most sensitive species. The CTR is a peer reviewed target, and EPA/SWRCB have approved reliance on CTR and use of EqP (a peer reviewed method) to derive targets. <p><u>Against</u></p> <ul style="list-style-type: none"> - Target assumes: (1) equilibrium conditions exist; (2) organisms only accumulate pollutants from pore-water and not dietary intake, (3) percent organic carbon is consistent; in addition calculated targets can vary considerably depending on the logKoc selected. - Target is based on the CTR aquatic life chronic criteria. The target would have to be calculated using the lower CTR human health criteria because of the COMM and REC1 beneficial uses in the watershed. Further, the CTR aquatic life chronic criteria are based on osprey and brown pelican data, which may not be the most sensitive endpoint. The derived target may not be sufficiently protective of species, such as Least Terns, that may be more highly exposed and are within the same feeding guild as ospreys and pelicans.
Chlordane in freshwater sediment	4.5 ppb	70 ppb			
Chlordane in saltwater sediment	2.26 ppb	65 ppb			

OC Compound	Draft TMDL Proposed Target	Commentators Proposed Target	Derivation of Draft TMDL Proposed Target	Derivation of Commentators Proposed Target	Issues
Toxaphene in freshwater sediment	0.1 ppb	15.8 ppb	Equilibrium Partitioning Source: Developed by NY Department of Environmental Conservation (1999)	Equilibrium Partitioning Derived from CTR (method approved by SWRCB and EPA)	<p>Draft TMDL Proposed Target:</p> <p><u>For</u></p> <ul style="list-style-type: none"> - The State of New York toxaphene target was selected as a conservative guideline that is corrected for organic carbon and should address protection of benthic organisms and bioaccumulation in higher organisms. This approach, which is consistent with USEPA's Technical TMDLs, has also been used to establish sediment quality guidelines for the State of Florida and Canada. <p><u>Against</u></p> <ul style="list-style-type: none"> - NY State target is not appropriate because it was calculated using a partitioning coefficient that could not be found in the scientific literature and that is much lower than currently accepted values. Using the logKow cited in the Staff Report (pg. 45), the 15.8 ppb target is derived. - Use of the EqP approach is inconsistent. The targets for DDT and Chlordane in the Draft TMDL do not rely upon EqP (see above), while the target for toxaphene in the Draft TMDL does use the EqP approach. The Draft TMDLs conclude that no non-EqP toxaphene target is available and therefore the NY State guidance is being relied upon. <p>Commentators Proposed Target:</p> <p><u>For</u></p> <ul style="list-style-type: none"> - Based on the same methodology as NY State guidance, but used USEPA's partition coefficient recommended for Newport Bay. Target was not adjusted using the relevant CTR aquatic life criterion, as relevant species (brown trout) used to calculate the CTR criterion are not present in Newport Bay. <p><u>Against</u></p> <ul style="list-style-type: none"> - The 15.8 ppb calculated target is based on the State of New York human health water quality criterion of 0.005 ppb; it should instead be based on the appropriate California (CTR) ambient water quality chronic criteria (0.0002 ppb for protection of aquatic life and 0.00073 ppb for protection of human health). Using EPA's partitioning coefficient for the watershed ($\log K_{ow} = 5.5$) and the CTR chronic criteria, the EqP-based numeric target would be 0.6 ppb for aquatic life and 2.3 ppb for human health. Both of these EqP-calculated targets are much lower than 15.8 ppb, and the CTR aquatic-life criteria target of 0.6 ppb is close to the draft TMDL target for toxaphene of 0.1 ppb.

TABLE 2. FISH TISSUE TARGETS

OC Compound	Draft TMDL Proposed Target	Commentators Proposed Target	Derivation of TMDL Proposed Target	Derivation of Commentators Proposed Target	Issues
Total DDT in freshwater and saltwater fish tissue	100 ppb <i>for protection of human health</i>	560 ppb <i>for protection of human health</i>	OEHHA (1999) screening levels for fish tissue based on 10 ⁻⁵ cancer risk per water body.	OEHHA (2006) screening levels in new draft guidance, based on 10 ⁻⁴ cancer risk per water body.	<p>Draft TMDL Proposed Target:</p> <p><u>For</u></p> <ul style="list-style-type: none"> OEHHA screening values (SVs) proposed as targets have been adopted and peer-reviewed, are recommended by the State Listing Policy for use in impairment assessments, and have been used as numeric targets to protect human consumers of fish. The current (1991) SVs are more conservative than the draft (2006) SVs and have a cancer risk factor (CRF) that is closer to that used in the CTR (10⁻⁶ CRF) providing a margin of safety. The screening values were appropriately applied in impairment assessments. <p><u>Against</u></p> <ul style="list-style-type: none"> Screening values were not intended as regulatory standards, and only signal the need for additional study to determine if health warnings might be needed. No health warnings have been issued by OEHHA for Newport Bay despite exceedance of adopted Screening Value. The adopted OEHHA screening value uses an inappropriate cancer risk assessment. The screening values were not appropriately applied in the impairment assessments.
Chlordane in saltwater fish tissue	30 ppb <i>for protection of human health</i>	200 ppb <i>for protection of human health</i>			<p>Commentators Proposed Target:</p> <p><u>For</u></p> <ul style="list-style-type: none"> The draft OEHHA screening values were developed using the most current information and correct prior flaws (identified above) in OEHHA methodology. For comparison at the federal level, the FDA action level for DDT in fish tissue is 50 times the proposed target. <p><u>Against</u></p> <ul style="list-style-type: none"> TMDLs cannot use draft guidelines or screening values as targets or in impairment assessments. Only final, peer-reviewed guidelines or screening values can be used. The OEHHA draft screening values are still undergoing the peer review process at OEHHA and may change before final adoption.
Toxaphene in freshwater fish tissue	30 ppb <i>for protection of human health</i>	220 ppb <i>for protection of human health</i>			

OC Compound	Draft TMDL Proposed Target	Commentators Proposed Target	Derivation of Draft TMDL Proposed Target	Derivation of Commentators Proposed Target	Issues
Total DDT in freshwater fish tissue	1,000 ppb <i>for protection of wildlife and aquatic life</i>	150 ppb <i>for protection of wildlife and aquatic life</i>	National Academy of Sciences (1972)	This value is the basis for the water column CTR criteria	Draft TMDL Proposed Target: <u>For</u> - NAS guidelines are intended to be protective of aquatic life as well as wildlife. Although the guidelines were developed in 1972, they are approved by the state to assess impairment (through the State Listing Policy) and are therefore also appropriate to use as targets. - The marine guidelines were not incorporated into the State Listing Policy documents, but are not precluded from being used. <u>Against</u> - NAS values are outdated, and studies conducted over the past 30+ years have established new thresholds for reproductive effects in sensitive species, which were the basis of NAS values. - Some studies support a threshold reproductive effect for the osprey, one of the more sensitive species in the watershed, in excess of 300 ppb. Therefore the proposed 50 ppb saltwater target is over-protective while the proposed 1,000 ppb freshwater target is under-protective. SWRCB approves use of 1,000 ppb from NAS guidelines for impairment assessment, not 50 ppb.
Total DDT in saltwater fish tissue	50 ppb <i>for protection of wildlife and aquatic life</i>	150 ppb <i>for protection of wildlife and aquatic life</i>			Commentators Proposed Target: <u>For</u> - 150 ppb was found to be protective of brown pelicans and ospreys with a margin of safety, and is the basis for the adopted CTR criteria. Ospreys are present in the watershed. <u>Against</u> - Target is based on a calculation derived from a DDE concentration in osprey eggs associated with reduced hatching success with the assumption that ospreys (and brown pelicans) are the most sensitive species present in the watershed. The egg tissue benchmark selected, however, may not be the most sensitive endpoint and the derived target may not be sufficiently protective of species that may be more highly exposed and that are within the same feeding guild as ospreys and pelicans, such as the endangered California Least Tern.